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With Which Is Combined

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Paper Awards for Government Printing Office

Joint Congressional Committee on Printing and Supplies Announces Successful Bidders On Numerous Varieties of Paper for A Period of Six Months or One Year Beginning March 1, Aggregating $2,553,534.41, As Compared with $3,108,706.99 for 1931, Being A Decrease of $555,172.58—All News Print Bids Are Rejected

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 1, 1932.—Awards as indicated below were made today by the Joint Committee on Printing for Supplies for the year, or for six months, as indicated, beginning March 1. As compared with 1931 figures the cost to the Government on an approximate aggregate $3,108,706.99 this year will be approximately $2,553,534.41 or a decrease under last year of $555,172.58. The awards for envelopes show a decrease from $62,375.30 last year to $55,850.90 a decrease of $6,624.40 or a total decrease as compared with 1931 of $561,696.98.

The new items in this year's schedule included 80,000 of 75 per cent Rag Laid Antique Book Paper.

Among the firms who bid last year and who are not represented this year are the National Pulp and Paper Company who got the 3,000,000 pounds of News Print Paper on which all bids were rejected this year; The Jessup & Moore Paper Company who last year secured a million and a half pounds of Chemical Wood Mimeographed Paper and one million three hundred thousand pounds of 30 per cent Rag Mimeographed Paper; and ten million pounds of U. S. Bristol Card Board; Eureka Specialty Printing Company who furnished 10,000 sheets of White Gummed Paper and Bartgis Brothers Company who supplied News Board and Chip Board last year, which will be supplied this year by the Rogers Printing Company.

Increases in quantities called for 1932 as compared with those awarded for 1931 shown an increase of 3,000 pounds in Machine Finished Book Paper, 20,000 pounds of Machine Finished Book End Paper; 75,000 pounds Antique Book Paper; 90,000 pounds 100 per cent Rag Machine Finished Book Paper; 100,000 pounds Super Calendered Book Paper; 70,000 pounds of Half Toned Book Paper; 50,000 pounds of Double Coated Book Paper; 30,000 pounds of 50 per cent Rag Double Coated Book Paper; 200,000 of White Chemical Wood Mimeograph Paper and a like amount of White Sulphite Writing Paper; 150,000 pounds White Sulphite Writing No. 32 and 100,000 pounds of Colored Sulphite Writing; 140,000 pounds of Manifold Paper; 100,000 Pounds of White Sulphite Bond Paper; 40,000 pounds 6 per cent White Bond Paper; 62,000 pounds Various Kinds of Ledger Paper; 30,000 pounds 100 per cent Rag White Index Paper and 50,000 pounds of Manila Tag Board; 100,000 pounds of Chip Board and a like amount of Sold Binders Board.

Prices, in the main, are materially lower for the quantities of paper last year, varying from fractions of cents to 4 and 5 cents per pound.

The Awards

The awards are as follows:

Newsprint

No. 1—3,000,000 pounds Newsprint Paper; basis 24x36 inches, 64 pounds. Rolls, 24, 36 and 48 inches (3-inch fibre cores, with metal ends. Rejected.

Machine-Finish Book

No. 3—800,000 pounds Machine-finish Book Paper; basis 25x38 inches, 70 pounds. Flat, cut 24x32, 28x38, and 31¼x45½ inches. R. P. Andrews Paper Co., Washington, D. C., 3.59 cents per lb. 1 year.

No. 4—1,000,000 pounds Machine-finish Book Paper; basis 25x38 inches, 70 pounds. Flat, cut 24x38 and 38x48 inches. E. P. Andrews Paper Co., Washington, 3.59 cents per lb. 1 year.

No. 5—1,000,000 pounds Machine-finish Book Paper; basis 25x38 inches. 70 pounds. Flat, cut 24x38 and 38x48 inches. R. P. Andrews Paper Co., 3.59 cents per lb. 1 year.

No. 6—800,000 pounds Machine-finish Book Paper; basis, 25x38 inches; 70 pounds. Rolls, 18, 21, 23 and 28½ inches wide, 3-inch iron cores. R. P. Andrews Paper Co., 3.26 cents per lb. 1 year.

No. 7—1,500,000 pounds, Machine-Finish Book Paper; 25x38 inches, 70 pounds. Rolls, 19 and 38 inches wide, 3-inch iron cores. R. P. Andrews Paper Co., 3.26 cents per lb. 1 year.

No. 8—1,500,000 pounds Machine-Finish Book Paper; basis 25x38 inches, 70 pounds. Rolls, 19 and 38 inches wide, 3-inch iron cores. R. P. Andrews Paper Co., 3.26 cents per lb. 1 year.

No. 9—500,000 pounds Machine-Finish Book Paper; basis 25x38 inches, 70 pounds. Rolls, 24, 36 and 48 inches

wide, 3-inch iron cores. R. P. Andrews Paper Co., 3.26 cents per lb. 1 year.

No. 10—300,000 pounds Machine-finish Book Paper; basis 25x38 inches, 80 pounds. Rolls, 32 inches wide, (3-inch iron cores). R. P. Andrews Paper Co., 3.25 cents per lb. 1 year.

No. 11—1,300,000 pounds Machine-finish Book Paper; basis 25x38 inches, 80 pounds. Flat, cut 24x38, 33¾x64, and 38x48 inches. R. P. Andrews Paper Co., 3.57 cents per lb. 1 year.

No. 12—600,000 pounds Machine-finish Book Paper; basis 25x38 inches, 100 pounds. Flat, cut 22¼x32¼, 24x38, 24½x36¼, 32x42, 38x48 and 41x52 inches. R. P. Andrews Paper Co., 3.51 cents per lb. 1 year.

No. 13—60,000 pounds Machine-finish Book Paper; basis 25x38 inches, 120 and 140 pounds. Flat, cut 24x30 (grain as ordered) 29x41, and 38x48 inches. Minimum order 7,500 pounds. R. P. Andrews Paper Co., 3.53 cents per lb. 1 year.

No. 14—60,000 pounds Colored Machine-finish Book Paper, blue and salmon; basis 25x38 inches, 70 and 100 pounds. Flat, cut 25x38 and 38x48 inches. Minimum order one color, 5,000 pounds. The Aetna Paper Co., Dayton, Ohio, 5.17 cents per lb. 1 year.

Machine-Finish Book End Paper

No. 16—100,000 pounds Machine-finish Book End Paper for Waste Leaves. Flat 25x38 inches, 160 pounds; the grain to run the 38-inch way. R. P. Andrews Paper Co., 3.60 cents. 1 year.

Antique Book

No. 17—125,000 pounds Antique Book Paper; basis 25x38 inches, 100 pounds. Flat, cut 25x38 and 38x50 inches. R. P. Andrews Paper Co., 3.52 cents per lb. 1 year.

Light Weight Machine-Finish Book

No. 18—100,000 pounds Light-weight Machine-finish Book Paper; basis, 25x38 inches, 60 pounds. Flat, cut 32x48 and 38x48 inches. The Whitaker Paper Co., Baltimore, Md., 4.878 cents per lb. 1 year.

50 Per Cent Rag Light Weight High Machine-Finish Book

No. 19—125,000 pounds 50 per cent Rag Light Weight High Machine-finish Book Paper; basis 25x38 inches, 60 pounds. Flat, cut 32x48 and 38x48 inches. The Whitaker Paper Co., 7.91 cents per lb. 1 year.

50 Per Cent Rag Machine-Finish Book

No. 20—150,000 pounds 50 per cent Rag Machine-finish Book Paper; basis 25x38 inches, 80 pounds. Flat, cut 32x48 inches. Patten Paper Co., Ltd., Appleton, Wis., 6.59 cents per lb. 1 year.

No. 21—450,000 pounds 50 per cent Rag Machine-finish Book Paper; basis 25x38 inches, 80 pounds. Flat, cut 38x48 inches. The Aetna Paper Co., 6.57 cents per lb. 1 year.

No. 22—100,000 pounds 50 per cent Rag Machine-finish Book Paper; basis 25x38 inches, 80 and 90 pounds. Flat, cut any size, minimum width 24 inches, maximum width 42 inches. Patten Paper Co., Ltd., 6.59 cents per lb. 1 year.

75 Per Cent Rag Laid Antique Book

No. 23—80,000 pounds 75 per cent Rag Laid Antique Book Paper; basis 25x38 inches, 140 pounds. Flat, cut 24x38 inches. The Aetna Paper Co., 7.47 cents per lb. 1 year.

100 Per Cent Rag Machine-Finish Book

No. 24—40,000 pounds 100 per cent Rag Machine-finish Book Paper; basis 25x38 inches, 90 pounds. Flat, cut 24x38 inches. Hawthorne Paper Co., Kalamazoo, Mich., 16.84 cents per lb. 1 year. (New white flannelette cuttings.)

No. 25—130,000 pounds 100 per cent Rag Machine-finish Book Paper; basis 25x38 inches, 140 pounds. Flat, cut 24x38 inches. R. P. Andrews Paper Co., 16.00 cents per lb. 1 year. (New White Cuttings.)

Supercalendered Book

No. 26—120,000 pounds Supercalendered Book Paper; basis 25x38 inches, 90 pounds. Flat, cut 32x48 inches. R. P. Andrews Paper Co., 3.65 cents per lb. 1 year.

No. 27—550,000 pounds Supercalendered Book Paper; basis 25x38 inches, 90 pounds. Flat, cut 31¼x45½ inches. R. P. Andrews Paper Co., 3.65 cents per lb. 1 year.

No. 28—1,200,000 pounds Supercalendered Book Paper; basis, 25x38 inches, 90 pounds. Flat, cut 24x38 and 38x48 inches. R. P. Andrews Paper Co., 3.65 cents per lb. 1 year.

No. 29—1,000,000 pounds Supercalendered Book Paper; basis 25x38 inches, 90 pounds. Rolls, 38 inches wide (3-inch iron cores). R. P. Andrews Paper Co., 3.31 cents per lb. 1 year.

No. 30—1,000,000 pounds Supercalendered Book Paper; basis 25x38 inches, 90 pounds. Rolls 28½ and 38 inches wide (3-inch iron cores). R. P. Andrews Paper Co., 3.31 cents per lb. 1 year.

No. 31—40,000 pounds Supercalendered Book Paper; basis 25x38 inches, 90 and 100 pounds. Flat, cut any size, minimum width 24 inches, maximum width 42 inches. R. P. Andrews Paper Co., 3.65 cents per lb. 1 year.

50 Per Cent Rag Supercalendered Book

No. 33—40,000 pounds 50 per cent Rag Supercalendered Book Paper; basis, 25x38 inches, 80 and 90 pounds. Flat cut 32x48 inches. American Writing Paper Co., Inc., Holyoke, Mass., 7.59 cents per lb. 1 year.

Half-Tone Book

No. 34—250,000 pounds Half-tone Book Paper; basis, 25x38 inches, 140 pounds. Flat, cut 24x38 and 38x48 inches. The Whitaker Paper Co., 3.778 cents per lb. 1 year.

Single-Coated Book

No. 35—350,000 pounds Single-coated Book Paper; basis, 25x38 inches, 140 pounds. Flat, cut 29x41, 38x48 and 41x52 inches. Perkins-Goodwin Co., New York, N. Y., 5.37 cents per lb. 1 year.

Double-Coated Book

No. 36—100,000 pounds double-coated Book Paper; basis, 25x38 inches, 140 and 160 pounds. Flat, cut 24x32, 24x38 and 38x48 inches. Perkins-Goodwin Co., 5.67 cents per lb. 1 year.

50 Per Cent Rag Double-Coated Book

No. 37—180,000 pounds 50 per cent Rag, Double-coated Book Paper; basis, 25x38 inches, 140 and 160 pounds. Flat, cut 24x32, 24x38, 32x42, 38x48 and 41x42 inches. The Aetna Paper Co., 9.47 cents per lb. 1 year.

Machine Finish Lithograph

No. 39—70,000 pounds Machine-finish Lithograph Paper; basis, 25x38 inches, 160 pounds. Flat, cut 19x24 and 24x38 inches. R. P. Andrews Paper Co., 3.94 cents per lb. 1 year.

50 Per Cent Rag Machine-Finish Lithograph

No. 40—80,000 pounds 50 per cent Rag Machine-finish Lithograph Paper; basis, 25x38 inches, 160 pounds. Flat, cut 26x38 inches. The Aetna Paper Co., 6.97 cents per lb. 1 year.

Chemical Wood Mimeograph, White and Colored

No. 43—1,700,000 pounds white Chemical Wood Mimeograph Paper, Nos. 40 and 48. Flat, cut 24½x30½ 24½x38, and 26x42½ inches. R. P. Andrews Paper Co., 3.61 cents per lb. 1 year.

No. 44—150,000 pounds Colored Chemical Wood Mimeograph Paper, blue, buff, green, pink and yellow. No. 40. Flat, cut 24½x30½, 24½ x 32, 24½x38 and 26x42½ inches. The Aetna Paper Co., 4.97 cents per lb. 1 year.

30 Per Cent Mimeograph

No. 47—1,300,000 pounds 30 per cent Rag Mimeograph Paper. Nos. 40 and 48. Flat, cut 24½x30½, 24½x32, 24½x38, 26x42½, and 28½x34½. The Aetna Paper Co., 5.37 cents per lb. 1 year.

Blue U. S. M. O. Safety Writing, Safety or Sensitive Design

No. 51—700,000 pounds Blue U.S.M.O. Safety Writing Paper. No. 32. Rolls, 11 and 22 inches wide, 24 inches in diameter (3-inch iron cores). The Perfect Safety Paper Co., Holyoke, Mass., 7.81 cents per lb. 1 year.

U. S. M. O. Writing, White and Blue

No. 52—15,000 pounds White and Blue U.S.M.O. Writing Paper, No. 32. Rolls 8½ inches wide, 24 inches in diameter (3-inch iron cores). The Perfect Safety Paper Co., 7.15 cents per lb. 1 year.

Safety Writing, Colored

No. 53—10,000 pounds Colored Safety Writing Paper, blue, gray, green, pink, salmon, and yellow, No. 40. Flat cut 17 x 28, 21 x 32 and 22 x 34 inches. The Barton, Duer & Koch Paper Co., Washington, D. C. 11.35 cents per lb. 1 year.

Sulphite Writing, White and Colored

No. 55—1,000,000 pounds White Sulphite Writing Paper, No. 32. Flat, cut 21 x 32, 22 x 34, 24 x 38, 26 x 34½, 28 x 34 and 32 x 42 inches. The Old Dominion Paper Co., Norfolk, Va., 4.232 cents per lb. 1 year.

No. 56—1,600,000 pounds White Sulphite Writing Paper, Nos. 40 and 48. Flat, cut 21 x 32, 22 x 34, 23 x 36, 24 x 38, 28 x 34, and 32 x 42 inches. The Old Dominion Paper Co., 4.232 cents per lb. I year.

No. 57—100,000 pounds White Sulphite Writing Paper, No. 26. Rolls, Minimum width 16 inches, maximum width 38 inches (3-inch iron cores). The Whitaker Paper Co., Dominion Paper Co., 4.232 cents per lb. 1 year.

No. 58—400,000 pounds White Sulphite Writing Paper, Nos. 40 and 48. Rolls, Minimum width 16 inches, maximum width 38 inches (3-inch iron cores). The Old Dominion Paper Co. 3.8111 cents per lb. 1 year.

No. 59—500,000 pounds White Sulphite Writing Paper Nos. 40 and 48. Rolls, minimum width 16 inches, maximum 38 inches (3-inch iron cores). The Whitaker Paper Co., 3.778 cents per lb. 1 year.

No. 60—30,000 pounds Colored Sulphite Writing Paper, blue, buff, cherry, green, pink, salmon and yellow, No. 26. Flat, cut 21 x 32, 22 x 34, 24 x 38 and 28 x 34 inches. The Aetna Paper Co., 5.87 cents per lb. 1 year.

No. 61—700,000 pounds Colored Sulphite Writing Paper, blue, buff, cherry, green, pink, salmon and yellow, Nos. 32 and 40. Flat, cut 21 x 32, 22 x 34, 24 x 38, 27 x 35, 28 x 34, and 32 x 30 inches. The Aetna Paper Co., 4.67 cents per lb. 1 year.

100 Per Cent Writing, Vellum Finish, Tub-Sized, Air-Dried

No. 63—5,000 pounds 100 per cent Rag White Writing Paper, Vellum Finish, Tub-sized, Air-dried, No. 56. Flat, cut 21 x 32 inches. The Old Dominion Paper Co., 18.22 cents per lb. 1 year.

Lithograph-Finish Map

No. 64—40,000 pounds Lithograph-finish Map Paper, Nos. 32 and 40. Flat, cut 24 x 38, 30 x 40, 32 x 48, 36 x 52, and 38 x 48 inches. The Aetna Paper Co., 5.97 cents per lb. 1 year.

50 Per Cent Rag Lithograph Map, Tub-Sized, Air-Dried

No. 65—150,000 pounds 50 per cent Rag Lithograph-finish Map Paper, Tub-sized, Air-dried, Nos. 40, 48 and 56. Flat, cut 34 x 64, 36 x 44, 36 x 52, 38 x 44, 38 x 48, 40 x 52, 41 x 50, 44 x 54 and 44 x 64 inches. Whiting Paper Co., Philadelphia, Pa., 10.50 cents per lb. 1 year.

75 Per Cent Rag Lithograph-Finish Map, Tub-Sized, Air-Dried

No. 66—200,000 pounds 75 per cent Rag Lithograph-finish Map Paper, Tub-Sized, Air-dried, No. 32 and 40. Flat, cut 24 x 38, 30 x 40, 32 x 48, 36 x 52, 38 x 48, 40 x 52, and 44 x 64 inches. R. P. Andrews Paper Co., 13.23 cents per lb. 1 year.

No. 67—30,000 puonds 75 per cent Rag Lithograph-finish Map Paper, Tub-sized. Air-dried, Nos. 48 and 56. Flat, cut 38 x 44, 41 x 50, 44 x 54 and 44 x 64 inches. R. P. Andrews Paper Co., 13.23 cents per lb. 1 year.

100 Per Cent Rag White Chart, Lithograph-Finish, Tub-Sized, Air-Dried

No. 69—250,000 pounds 100 per cent White Chart Paper, Lithograph finish, Tub-sized, Air-dried, No. 96. Flat, cut any size minimum width 22 inches, maximum width 46 inches. R. P. Andrews Paper Co., 16.27 cents per lb. 1 year.

Sulphite Manifold, White and Colored

No. 70—150,000 pounds White Sulphite Manifold Paper, No. 18. Flat, cut 21 x 32, 22 x 34 and 28 x 34 inches. Dobler & Mudge, Baltimore, Md. 6.245 cents per lb. 1 year.

No. 71—60,000 pounds Colored Sulphite Manifold Paper, blue, buff, cherry, green, pink, salmon and yellow, No. 18. Flat, cut 21 x 32, 22 x 34, and 28 x 34 inches; the grain to run the 21-inch way on the 21 x 32 inch size. Dobler & Mudge. 7.245 cents per lb. 1 year.

50 Per Cent Rag Manifold, White and Colored

No. 73—100,000 pounds 50 per cent Rag White Manifold Paper, No. 14. Flat, cut 21 x 32, 22 x 34, 28 x 34, and 38 x 48 inches. The Barton, Duer & Koch Paper Co., 13.25 cents per lb. 1 year.

No. 74—450,000 pounds 50 per cent White Rag Manifold Paper No. 18. Flat, cut 21 x 32 inches, 22 x 34, 24 x 38 and 28 x 34 inches. Corril A. Hubbard, Kalamazoo, Mich., 12.125 cents per lb. 1 year.

No. 75—15,000 pounds 50 per cent Rag Colored Manifold Paper, blue, buff, cherry, green, pink, salmon and yellow, No. 14. Flat, cut 21 x 32, 22 x 34, and 28 x 34 inches. The Barton, Duer & Koch Paper Co., 19.90 cents per lb. 1 year.

No. 76.—100,000 pounds 50 per cent Rag Colored Manifold Paper, blue, buff, cherry, green, pink, salmon and yellow, No. 18. Flat, cut 21 x 32, 22 x 34, 24 x 38 and 28 x 34 inches, the grain to run the 21-inch way on the 21 x 32 inch size. Corril A. Hubbard, 14.11 cents per lb. 1 year.

100 Per Cent Rag Manifold, White and Colored, Tub-Sized, Air-Dried

No. 78—10,000 pounds 100 per cent Rag White Manifold Paper, Tub-Sized, Air-Dried, No. 14. Flat, cut 17 x 28, 19 x 32, and 22 x 34 inches. The Whitaker Paper Co., 32.50 cents per lb. 1 year.

No. 79—20,000 pounds 100 per cent Rag White Manifold Paper, Tub-Sized, Air-Dried, No. 18. Flat, cut 17 x 28, 19 x 24, 21 x 32 and 22 x 34 inches. Virginia Paper Co., Inc., Washington, D. C., 26.845 cents per lb. 1 year.

No. 80—5,000 pounds 100 per cent Rag Colored Manifold Paper, blue, buff, cherry, green, blue, salmon and pink, No. 14. Flat, cut 17 x 28, 19 x 24, 21 x 32, 22 x 34 and 26 x 32 inches. Virginia Paper Co., Inc., 34.80 cents per lb. 1 year.

No. 81—5,000 pounds 100 per cent Rag Colored Manifold Paper, blue, buff, cherry, green, pink, salmon and yellow, No. 18. Flat, cut 17 x 28, 21 x 32, 22 x 34 and 24 x 38 inches. Virginia Paper Co., Inc., 28.833 cents per lb. I year.

50 Per Cent Glazed Manifold

No. 83—80,000 pounds 50 per cent Rag White Glazed Manifold Paper No. 16. Flat, cut 19 x 24 and 21 x 32 inches; the grain to run the 21-inch way of the 21 x 32 inch size. Coy, Disbrow & Co., Inc. New York, N. Y. 15.30 cents per lb. 1 year.

Sulphite Bond, White and Colored

No. 101—10,000 pounds White Sulphite Bond Paper, No. 26. Flat, any size, minimum width 17 inches, maximum 32 inches. The Aetna Paper Co., 5.37 cents per lb. 1 year.

No. 102—700,000 pounds white sulphite Bond Paper, Nos. 32 and 40. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Old Dominion Paper Co., 4.3799 cents per lb. 1 year.

No. 103—10,000 pounds White Sulphite Bond Paper, No. 48. Flat cut any size, minimum width 17 inches, maximum 32 inches. The Aetna Paper Company. 4.77 cents per lb. 1 year.

No. 104—10,000 pounds Colored Sulphite Bond Paper, blue, buff, cherry, green, pink, salmon and yellow, Nos. 32 and 40. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 5.37 cents per lb. 1 year.

No. 105—10,000 pounds Colored Sulphite Bond Paper, blue, buff, cherry, green, pink, salmon and yellow, No. 48. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 5.47 cents per lb. 1 year.

30 Per Cent Rag Bond, White and Colored, Tub-Sized, Air-Dried

No. 109—200,000 pounds 30 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 26, Flat, cut 21 x 32, 23 x 36, 24 x 38 and 28 x 34 inches. The Whitaker Paper Co., 9.988 cents per lb. 1 year.

No. 110—800,000 pounds 30 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 32. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 8.47 cents per lb. 1 year.

No. 111—900,000 pounds 30 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 40. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 7.97 cents per lb. 1 year.

No. 112—900,000 pounds 30 per cent Rag White Bond Paper. Tub-sized, Air-dried, No. 40. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. Hawthorne Paper Co., 7.78 cents per lb. 1 year.

No. 113—750 pounds, 30 per cent Rag White Bond, Tub-sized, Air-dried, No. 48. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 8.07 cents per lb. 1 year.

No. 114—60,000 pounds 30 per cent Rag Colored Bond Paper, Tub-sized, Air-Dried, blue, buff, cherry, green, pink, salmon, and yellow, No. 26. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 12.97 cents per lb. 1 year.

No. 115—250,000 pounds 30 per cent Rag Colored Bond Paper, Tub-sized, Air-dried, blue, buff, green, cherry, pink, salmon and yellow, No. 32. Flat, cut any size, minimum width 17 inches; maximum width 32 inches. The Aetna Paper Co., 9.47 cents per lb. 1 year.

No. 116—240,000 pounds 30 per cent Colored Rag Bond Paper, Tub-sized, Air-dried, blue, buff, cherry, green, pink, salmon, and yellow, No. 40. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 8.47 cents per lb. 1 year.

No. 117—300,000 pounds 30 per cent Rag Colored Bond Paper, Tub-sized, Air-dried, blue, buff, cherry, pink, salmon and yellow, No. 48. Flat, cut any size, minimum width 17 inches, maximum width 42 inches. The Aetna Paper Co., 8.47 cents per lb., 1 year.

50 Per Cent Rag Bond, White and Colored, Tub-Sized, Air-Dried

No. 120—120,000 pounds 50 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 26. Flat cut 21 x 32, 23 x 36, 24 x 38 and 28 x 34 inches. Virginia Paper Co., Inc., 12.925 cents per lb. 1 year.

No. 121—800,000 pounds 50 per cent Rag White Bond Paper, Tub-sized, Air-dried, Nos. 32 and 40. Flat, cut any size, minimum width 17 inches maximum width, 32 inches. The Aetna Paper Co., 9.07 cents per lb. 1 year.

No. 122—100,000 pounds 50 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 48. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 10.25 cents per lb. 1 year.

No. 123—25,000 pounds 40 per cent Rag Colored Bond Paper, Tub-sized, Air-dried, blue, buff, cherry, green, pink, salmon, and yellow, Nos. 26, 32 and 40. Flat, cut any size, minimum width 17 inches, maximum width, 32 inches. The Barton, Duer & Koch Paper Co., 14.20 cents per lb. 1 year.

75 Per Cent Rag White Bond, Tub-Sized, Air-Dried

No. 125—5,000 pounds 75 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 26. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Barton, Duer & Koch Paper Co., 17.50 cents per lb. 1 year.

No. 126—5,000 pounds 75 per cent Rag White Bond Paper, Tub-sized, Air-dried. Nos. 32, 40 and 48. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Old Dominion Paper Co., 14.43 cents per lb. 1 year.

100 Per Cent Rag White Bond, Tub-Sized, Air-Dried

No. 128—6,000 pounds 100 per cent Rag White Bond Paper, Tub-sized, Air-dried, Nos. 32 and 40. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Old Dominion Paper Co., 18.94 cents per lb. 1 year.

No. 129—6,000 pounds 100 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 48. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Old Dominion Paper Co., 18.94 cents per lb. 1 year.

Declaration Bond, Tub-Sized, Air-Dried

No. 130—6,000 pounds Declaration Bond Paper Tub-sized, Air-dried, Nos. 32 and 40. Flat, cut 17 x 22 and 22 x 25½ inches. The Barton, Duer & Koch Paper Co., 20.50 cents per lb. 1 year.

MORE BANKER PROOF EVIDENCE
No. 7 of a series of actual mill reports. Watch for the rest

"That TENSILASTIC RAN 16 MONTHS *without grinding...* We'll save $4762.85"

16 MONTHS CONTINUOUS SERVICE,—against 3 months on previous rolls of another make. That's the record of a Tensilastic Rubber Press Roll in a Minnesota book mill.

The Tensilastic was put in service in August and ran without interruption until December of the following year. In caliper-ing the roll before grinding it was found that there was a difference of only .018 in size between the ends . . . and the crowning was still true!

Any board of directors would enthuse over such a report. Especially when it is carried through to its ultimate "Banker Proof "conclusion,—$4,762.85 actually saved in the potential 15 year life of the Tensilastic roll. See for yourself. . .

ORDINARY RUBBER PRESS ROLL

5 replacements in 15 years, at $626	**$3130.00**
Interest, $3130 at 6% (mean of 7½ years)	**1408.50**
Grinding every 3 months, at $20	**1200.00**
Interest, $1200 at 6% (mean of 7½ years)	**540.00**
Total cost, purchase and maintenance	**$6278.50**

TENSILASTIC RUBBER PRESS ROLL

1 roll, at $626	**$626.00**
Interest, $626 at 6%, 15 years	**563.40**
Grinding, every 16 months, at $20	**225.00**
Interest, $225 at 6% (mean of 7½ years)	**101.25**
Total cost, purchase and maintenance	**$1515.65**

Over 40 years of specializing in rubber roll con-struction has taught us a lot of things that are responsible for the high quality of Tensilastic performance. For instance. . . .

TENSILASTICS ARE AMAZINGLY WEAR RESISTANT. As table and felt carriers they are proof against surface scratches and mars, cor-rugation and distortion, water pits and acid cor-rosion. They do not pick up either pitch or fibres, reducing the hazards of plugged wires and felts.

TENSILASTICS ARE EXCEPTIONALLY SLOW IN DEPRECIATION. In their preserv-ance of tensile strength and density they far exceed any other rubber compound ever produced. They are so resistant to oxidation that they may be stored for long periods without deteriorating.

TENSILASTICS ARE MODERN—Made of a super-compound developed, not by rule of thumb, but by precise laboratory methods based on an intimate understanding of rubber behavior and paper mill requirements.

TENSILASTICS ARE READY FOR ANY PERFORMANCE TEST. Try them on your machines,—either as complete installations or as units running with your present rolls,—in any machine position,—table, press, couch, breast, stretch or carrier. They'll give you new ideas of rubber roll performance and rubber roll economies.

Write for copies of
"The USE AND ABUSE of RUBBER ROLLS"
"DENSITY and CROWN-ING of PRESS ROLLS"
"TENSILASTIC and WHAT IT MEANS"

American Wringer Co., Inc.

Rubber Roll Specialists for More Than 40 Years

Woonsocket, R. I. Farnham, Quebec

33 No. La Salle St., Chicago — Pacific Coast Representative: Walter S. Hodges, Lewis Bldg., Portland, Ore. — 461 Eighth Ave., New York

TENSILASTIC RUBBER ROLLS

T25

Parchment Deed, White and Cream, Tub-Sized, Air-Dried

No. 131—4,000 pounds white and cream Parchment Deed Paper, Tub-sized, Air-dried, No. 64. Flat, cut 33 x 34 inches. The Old Dominion Paper Co., 18.21 cents per lb. 1 year.

Sulphite Ledger, White and Colored

No. 151—40,000 pounds White Sulphite Ledger Paper, Nos. 56 and 64. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 5.07 cents per lb. 1 year.

No. 152—50,000 pounds White Sulphite Ledger Paper No. 80. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. The Aetna Paper Co., 5.07 cents per lb. 1 year.

No. 153—12,000 pounds Colored Sulphite Ledger Paper, blue, buff, green, pink, salmon and yellow, No. 80. Flat, cut 21 x 32½ inches. The Aetna Paper Co., 6.57 cents per lb. 1 year.

30 Per Cent Rag Ledger, White and Colored, Tub-Sized, Air-Dried

No. 154—30,000 pounds 30 per cent Rag White Ledger Paper, Tub-sized, Air-dried, Nos. 48 and 56. Flat, cut 20 x 28, 21 x 32, 24 x 38, 28 x 29, and 28 x 34 inches. Hawthorne Paper Co., 8.83 cents per lb. 1 year.

No. 155—10,000 pounds 30 per cent Rag White Ledger Paper, Tub-sized, Air-dried No. 64. Flat, cut 21 x 32 and 23 x 36 inches. Hawthorne Paper Co., 8.83 cents per pound. 1 year.

No. 156—20,000 pounds 30 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 72. Flat, cut 20 x 28, 21 x 32, 24 x 38 and 28 x 34 inches. Hawthorne Paper Co., 8.83 cents per lb. 1 year.

No. 157—15,000 pounds 30 per cent Rag Colored Ledger Paper, Tub-sized, Air-dried, blue, buff, pink, green, salmon, and yellow, Nos. 56, 64, and 72. Flat, cut 21 x 32, 23 x 36, 24 x 38, and 28 x 34. Whiting Paper Co., Philadelphia, Pa., 11.00 cents per lb. 1 year.

50 Per Cent Rag Ledger, White and Colored, Tub-Sized, Air-Dried

No. 160—100,000 pounds 50 per cent Rag White Ledger Paper, Tub-sized, Air-dried, Nos. 48 and 56. Flat, cut 18½ x 36, 18 x 40¼, 20 x 28, 21 x 32, 24 x 38, 88 x 29 and 28 x 34 inches. Hawthorne Paper Co., 10.44 cents per lb. 1 year.

No. 161—60,000 pounds 50 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 64. Flat, cut 21 x 32 and 23 x 36 inches. Hawthorne Paper Co., 10.44 cents per lb. 1 year.

No. 162—100,000 pounds 50 per cent Rag White Ledger Paper, Tub-sized, Air-dried, Nos. 72 and 80. Flat, cut 20 x 28, 21 x 32, 24 x 38, and 28 x 34 inches. Hawthorne Paper Co., 10.44 cents per lb. 1 year.

No. 163—50,000 pounds 50 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 88. Flat, cut 21 x 32½ inches. R. P. Andrews Paper Co., 10.47 cents per lb. 1 year.

No. 164—110,000 pounds 50 per cent Colored Rag Ledger Paper, Tub-sized, Air-dried, blue, buff, cherry, green, pink, salmon, and yellow, Nos. 56, 64 and 72. Flat, cut 18½ x 36, 18½ x 40¼, 19 x 24, 21 x 32, 23 x 36, and 28 x 34 inches. R. P. Andrews Paper Co., 11.235 cents per lb. 6 months.

No. 165—60,000 pounds 50 per cent Rag Colored Ledger Paper, Tub-sized, Air-dried, blue and buff, cherry, fawn, green, pink, salmon, and yellow, No. 88. Flat, cut 21 x 32½ inches. R. P. Andrews Paper Co., 11.235 cents per lb. 6 months.

75 Per Cent Rag Ledger, White and Colored, Tub-Sized, Air-Dried

No. 168—30,000 pounds 75 per cent Rag White Ledger Paper, Tub-sized, Air-dried, Nos. 48 and 56. Flat, cut 21 x 32, 24 x 38, 28 x 29 and 28 x 34 inches. The Barton, Duer & Koch Paper Co., 12.40 cents per lb. 1 year.

No. 169—40,000 pounds 75 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 64. Flat, cut 21 x 32, 23 x 36, 24 x 38, and 28 x 34 inches. The Barton, Duer & Koch Paper Co., 12.40 cents per lb. 1 year.

No. 170—25,000 pounds 75 per cent Rag White Ledger Paper, Tub-sized, Air-dried, Nos. 72 and 80. Flat, cut 20 x 28, 21 x 32, 24 x 38 and 28 x 34 inches. The Barton, Duer & Koch Paper Co., 12.40 cents per lb. 1 year.

No. 171—10,000 pounds 75 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 88. Flat, cut 21 x 32½ inches. The Barton, Duer & Koch Paper Co., 12.40 cents per lb. 1 year.

No. 172—20,000 pounds 75 per cent Rag Colored Ledger Paper, Tub-sized, Air-dried, blue, buff, cherry, green, pink, salmon, and yellow. Nos. 56, 64 and 72. Flat, cut 19 x 24, 21 x 32, 23 x 36 and 28 x 34 inches. R. P. Andrews Paper Co., 12.74 cents per lb. 6 months.

No. 173—16,000 pounds 75 per cent Rag Colored Ledger Paper, Tub-sized, Air-dried, blue, buff, cherry, fawn, green, pink, salmon and yellow, No. 88. Flat, cut 21 x 32½ inches. R. P. Andrews Paper Co., 12.74 cents per lb. 6 months.

100 Per Cent Rag White Ledger Paper, Tub-Sized, Air-Dried for Permanent Records

No. 176—15,000 pounds 100 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 48. Flat, cut 21 x 32, 22¾ x 31½, 23 x 36, 24 x 38 and 28 x 34 inches. Carew Mfg. Co., South Hadley Falls, Mass., 16.49 cents per lb. 1 year. (Unbleached Muslin, unbleached or Cream Hosiery.)

No. 177—50,000 pounds 100 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 56. Flat, cut 20 x 28, 21 x 32, 23 x 36, 24 x 38 and 28 x 34 inches. Carew Mfg. Co., 16.49 cents per lb. 1 year. (Unbleached Muslin, unbleached or Cream Hosiery.)

No. 178—25,000 pounds 100 per cent Rag White Ledger Paper, Tub-sized, Air-dried No. 64. Flat, cut 18½ x 42, 21 x 32, 23 x 36 and 28 x 34 inches. Carew Mfg. Co., 16.49 cents per lb. 1 year. (Unbleached Muslin, unbleached or Cream Hosiery.)

No. 179—15,000 pounds 100 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 70. Flat, cut 20 x 28, 21 x 32, 24 x 38 and 28 x 34 inches. Carew Mfg. Co., 16.49 cents per lb. 1 year. (Unbleached Muslin, unbleached or Cream Hosiery.)

No. 180—8,000 pounds 100 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 80. Flat, cut 21 x 32½ and 21 x 42 inches. Carew Mfg. Co., 16.49 cents per lb. 1 year. (Unbleached Muslin, Unbleached or Cream Hosiery.)

No. 181—35,000 pounds 100 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 88. Flat, cut 20½ x 24¾, 21 x 32½, and 22¾ x 31½ inches. Carew Mfg. Co., 16.49 cents per lb. 1 year. (Unbleached Muslin, Unbleached or Cream Hosiery.)

Sulphite Index, White and Colored, Single-Ply

No. 184—90,000 pounds White Sulphite Index, single-ply; bases 22½ x 28½ inches; 182 and 230 pounds. Flat, cut 21 x 32½, 22½ x 28½ and 24½ x 32½ inches, with projecting colored paper marker between each 100 sheets. The Aetna Paper Co., 5.17 cents per lb. 1 year.

No. 185—5,000 pounds White Sulphite Index, single-ply; bases 22½ x 28½ inches, 280 and 362 pounds. Flat, cut 21 x 32½ and 22½ x 28½ inches. The Old Dominion Paper Co., 5.799 cents per lb. 1 year.

No. 186—6,000 pounds Colored Sulphite Index, single-ply, blue, buff, fawn, green, pink, salmon and yellow; bases 22½ x 28½ inches. 182 and 230 pounds. Flat, cut 21 x 32½ and 22½ x 28½ inches. R. P. Andrews Paper Co., 6.75 cents per lb. 1 year.

No. 187—6,000 pounds Colored Sulphite Index, single-ply, blue, buff, fawn, green, pink, salmon and yellow; bases 22½ x 28½ inches, 280 and 362 pounds. Flat, cut 21 and 32½ inches and 22½ x 28½ inches. The Aetna Paper Co., 9.97 cents per lb. 1 year.

50 Per Cent Rag Index, White and Colored, Single-Ply

No. 190—120,000 pounds 50 per cent Rag White Index, single-ply; bases, 22½ x 28½ inches. 182 and 230 pounds. Flat, cut 21 x 32½ and 22½ x 28½ inches. Marquette Paper Co., Chicago, Ill., 9.80 cents per lb. 1 year.

No. 191—15,000 pounds 50 per cent Rag White Ledger single-ply; bases 22½ x 28½ inches, 280 and 362 pounds. Flat, cut 21 x 32½ and 22½ x 28½ inches. Virginia Paper Co., Inc., 11.722 cents per lb. 1 year.

No. 192—70,000 pounds Rag Colored Index, single-ply, blue, buff, fawn, green, pink, salmon and yellow; bases 22½ x 28½ inches, 182 and 230 pounds. Flat, cut 21 x 32½ and 22½ x 28½ inches. The Aetna Paper Co., 10.97 cents per lb. 1 year.

No. 193—25,000 pounds 50 per cent Rag Colored Index, single-ply; blue, buff, fawn, green, pink, salmon and yellow; bases 22½ x 28½ inches, 280 and 362 pounds. Flat, cut 21 x 32½ inches and 22½ x 28½ inches. Virginia Paper Co., Inc., 12.677 cents per lb. 1 year.

100 Per Cent Rag White Index, Single-Ply, Tub-Sized, Air-Dried for Permanent Records

No. 196—170,000 pounds 100 per cent Rag White Index, single-ply, Tub-sized, Air-dried; basis 22½ x 28½ inches, approximately 206 pounds. Flat, cut 20½ x 30½ and 21 x 32½ inches. Carew Mfg. Co., 15.74 cents per lb. 1 year.

Tissue Paper

No. 197—5,000 pounds White Tissue Paper. Flat, 21 x 32 inches, 18 pounds. R. P. Andrews Paper Co., 8.97 cents per lb. 6 months.

Facing Stereo Tissue

No. 198—1,000 pounds Facing Stereo Tissue Paper; basis 19 x 24 inches, 9 pounds. Rolls 24 inches wide (3 inch iron cores). Lowest Bid Rejected. Cauthorne Paper Co., Inc., Richmond, Va., 67.94 cents per lb. 1 year.

Coated Cover, Colored

No. 201—200,000 pounds Colored Coated Cover Paper, India Tint, light green, light gray and primrose. Flat 26½ x 41 inches, 208 pounds. Perkins-Goodwin Co., 5.815 cents per lb. 1 year.

25 Per Cent Rag Machine-Finish Cover, Colored

No. 203—30,000 pounds 25 per cent Rag Colored Antique Machine-Finish Cover Paper, quaker drab, robin's egg, and terra cotta. Flat, 20 x 25 inches, 96 pounds. In wrapped bundles. Knowlton Bros., Watertown, N. Y., 6.08 cents per lb. 1 year.

No. 204—140,000 pounds 25 per cent Rag Colored Smooth Machine-Finish Cover Paper, blue, brown, granite, green, pink, tea and yellow. Basis 20x26 inches, 100 pounds. Flat, cut 20x25 and 23x46 inches, in wrapped bundles. The Aetna Paper Co., 5.67 cents per lb. 1 year.

50 Per Cent Rag Laid Cover, Colored

No. 205—18,000 pounds 50 per cent Rag Colored Laid Cover Paper (Manufacturers' Stock shades as selected) blue, buff, cream, white, gray, green and terra cotta; basis 20x26 inches, 130 pounds. Flat, cut 20x25 and 26½x41 inches in wrapped bundles, with colored-paper marker between each 500 sheets. R. P. Andrews Paper Co., 10.35 cents per lb. 1 year.

50 Per Cent Rag Antique Cover, Colored

No. 206—80,000 pounds 50 per cent Rag Colored Antique Cover Paper, dawn, gobelin-blue, khaki, moss-green, sage and suede. Flat, cut 20x25 inches. The Aetna Paper Co., 6.67 cents per lb. 1 year.

Manila Paper—Wood Manila

No. 209—200,000 pounds Wood Manila Paper; basis 24x36 inches, 60 to 120 pounds. Flat, cut 21x32, 22½x 34½ and 25x38 inches. Perkins-Goodwin Co., 2.895 cents per lb. 1 year.

No. 210—550,000 pounds Wood Manila Paper; basis, 24x36 inches, 60 to 120 pounds. Rolls 9, 11½, 18 and 21 inches wide (3-inch iron cores); except the 9 and 11½ inch rolls. Perkins-Goodwin Co., 2.737 cents per lb. 1 year.

Sulphite Manila

No. 211—50,000 pounds Sulphite Manila Paper; basis, 24x36 inches, 100 to 160 pounds. Flat, cut any size. Virginia Paper Co., Inc., 3.85 cents per lb. 1 year.

No. 212—80,000 pounds Sulphite Manila Paper; basis, 24x36 inches, 100 pounds. Rolls 18 inches wide, (3-inch iron cores). Virginia Paper Co., Inc., 3.85 cents per lb. 1 year.

Rope Manila

No. 213—30,000 pounds Rope Manila Paper; basis, 24x36 inches, 120, 140 and 160 pounds. Rolls, 48 inches wide (3-inch iron cores). Reese & Reese, Inc., Baltimore, Mo., 11.50 cents per lb. 1 year.

No. 214—45,000 pounds Rope Manila Paper, basis, 24x 36 inches, 280 pounds. Rolls 48 inches wide (3-inch iron cores). Reese & Reese, Inc., 10.35 cents per lb. 1 year.

Kraft Paper—No. 2 Kraft

No. 217—300,000 pounds No. 2 Kraft Wrapping Paper; basis, 24x36 inches, 60 to 160 pounds. Flat, cut any size. R. P. Andrews Paper Co., 3.30 cents per lb. 1 year.

No. 218—450,000 pounds No. 2 Kraft Wrapping Paper, basis, 24x36 inches, 60 to 160 pounds. Cut any size, folded. R. P. Andrews Paper Co., 3.30 cents per lb. 1 year.

No. 219—250,000 pounds No. 2 Kraft Wrapping Paper, basis, 24x36 inches, 60 to 160 pounds. Rolls 11½, 24, 36 and 48 inches wide. R. P. Andrews Paper Co., 3.05 cents per lb. 1 year.

No. 1 Kraft

No. 220—20,000 pounds No. 1 Kraft, basis 24x36 inches, 120 and 160 pounds. Perkins-Goodwin Co., 4.389 cents per lb. 1 year.

Tag Board. High-Finish Sulphite Manila Tag

No. 221—200,000 pounds High-Finish Sulphite Manila Tag Board, basis 24x36 inches, 160 to 280 pounds. The Aetna Paper Co., 4.67 cents per lb. 1 year.

Calendered Tag, Manila and Colored For Use on Tabulating Machines

No. 224—600,000 pounds Manila Calendered Tag Board; basis 22½x28½ inches approximately 148 pounds. Rolls 23½ and 26½ inches wide. 6-inch iron cores. Lowest bid rejected. The Barton, Duer & Koch Paper Co., 6.75 cents per lb. 1 year.

No. 225—150,000 pounds Colored Calendered Tag Board, blue, brown, green, pink, red, salmon and yellow; basis 22½x28½ inches, approximately 148 pounds. Rolls, 23½ and 26½ inches wide. Lowest bid rejected. The Barton, Duer & Koch Paper Co., 7.50 per lb. 1 year.

Jute Tag

No. 227—120,000 pounds Jute Tag Board; basis, 22½x28½ inches, 200 to 280 pounds. Flat, cut 22½x28½ inches in wrapped bundles. The Whitaker Paper Co., 6.75 cents per lb. 1 year.

Cardboard—Manila Board

No. 301—80,000 pounds Manila cardboard; basis, 22½x28½ inches, 400 pounds. Flat, cut 17x28 inches, 21x32 and 22½x28½, in wrapped bundles. R. P. Andrews Paper Co., 3.65 cents per lb. 1 year.

Railroad Board, White and Colored

No. 302—90,000 sheets White Railroad Board. Flat, 22x28 inches, 4-ply, each 100 sheets fully banded, packed in wooden cases. The Barton, Duer & Koch Paper Co., $20.79 per 1000 sheets. 1 year.

No. 303—20,000 sheets White Railroad Board. Flat, 22x28 inches, 8-ply. M. M. Elish & Co., Inc., New York, N. Y., $31.87 per 1000 sheets. 1 year.

No. 304—20,000 sheets White Railroad Board. Flat, 22x28 inches, 14 ply, packed in wooden cases. M. M. Elish & Co., Inc., $49.245 per 1000 sheets, 1 year.

No. 305—150,000 sheets Colored Railroad Board, ash gray, blue, buff, green, lemon and orange. Flat, 22x28 inches, 4-ply. M. M. Elish & Co., Inc., $22.995 per 1000 sheets. 1 year.

Wood Bristol, Colored

No. 306—80,000 pounds Colored Wood Bristol Board, buff. Basis 22½x28½ inches, 150 pounds. Rolls 20 and 22 inches wide (6-inch iron cores). Thos. J. McCormick Paper Corp., New York, N. Y., 3.59 cents per lb. 1 year.

No. 307—200,000 pounds Colored Wood Bristol Board, blue, buff, gray, green, melon, pink, quaker drab and yellow. Flat, 21x31 inches. 204 pounds. The Whitaker Paper Co., 3.43 cents per lb. 1 year.

No. 308—300,000 pounds Colored Wood Bristol Board, blue, brown, buff, gray, green, melon, pink and yellow; basis 22½x28½ inches, 200 pounds. Rolls 20 inches wide (6 inch iron cores). The Whitaker Paper Co., 3.43 cents per lb. 1 year.

No. 309—300,000 pounds colored Wood Bristol Board, blue, brown, buff, gray, green, melon, pink and yellow; basis 22½x28½ inches, 200 pounds. Rolls 20 inches wide (6 inch iron cores). The Whitaker Paper Co., 3.43 cents per lb. 1 year.

No. 310—100,000 pounds Colored Wood Bristol Board, buff; basis, 22½x28½ inches, 200 pounds. Flat, cut 12x18, and 14½x17½ inches. The Whitaker Paper Co., 3.43 cents per lb. 1 year.

U. S. Postal Card Bristol

No. 311—10,000,000 pounds U. S. Bristol Card Board; basis 22½x28½, 188 pounds. Rolls 33 inches wide and 34 inches in diameter (6-inch iron cores). The Whitaker Paper Co., 3.337 cents per lb. 1 year.

Miscellaneous Paper

No. 351—6,000 pounds White Paraffin Paper. Flat, 24x38 inches, 32 pounds. Mathers-Lamm Paper Co., Washington, D. C., 9.52 cents per lb. 6 months.

No. 352—200,000 sheets White Gummed Paper. Flat, 17x22 inches, 40 pounds exclusive of weight of gum used. Cauthorne Paper Co., Inc., $4.96 per 1000 sheets. 1 year.

No. 353—10,000 sheets White Gummed Paper. Flat, 20x25 inches. 53 pounds, exclusive of weight of gum used. Cauthorne Paper Co., Inc., $6.76 per 1000 sheets. 1 year.

No. 354—16,000 pounds White Blotting Paper. Flat, 19x24 inches, 160 pounds, in wrapped bundles of 250 or 500 sheets. The Whitaker Paper Co., 4.92 cents per lb. 1 year.

No. 355—8,000 sheets Colored Blotting Paper, manufacturer's stock shade, buff and salmon. Flat, 19x24 inches, 100 pounds. The Whitaker Paper Co., 4.92 cents per lb. 1 year.

No. 356—40,000 pounds 25 per cent Rag White Blotting Paper. Flat, 19x24 inches, 160 pounds. The Whitaker Paper Co., 5.83 cents per lb. 1 year.

No. 357—12,000 pounds 25 per cent Rag Colored Blotting Paper, manufacturers' stock shade, buff and salmon. Flat, 19x24 inches, 160 pounds. The Whitaker Paper Co., 5.83 cents per lb. 1 year.

No. 358—50,000 pounds Desk Blotting Paper, Manufacturer's stock shade, blue and buff. Flat, 19x24 inches, 200 pounds. The Whitaker Paper Co., 4.92 cents per lb. 1 year.

No. 359—125,000 pounds Moss-green Desk Blotting Paper, manufacturer's stock shade. Flat, 19x24 inches, 200 pounds. R. P. Andrews Paper Co., 5.09 cents per lb. 1 year.

No. 360—4,000 pounds White Stereotype Molding Paper for paper process; basis, 19x24 inches, 120 pounds. Rolls 24 inches wide. Cauthorne Paper Co., Inc., 8.44 cents per lb. 1 year.

No. 361—3,000 pounds Red Stereotype Molding Paper for paper process; basis 19x24 inches, 80 pounds. Rolls, 24 inches wide, 3-inch iron cores. Bids rejected.

No. 362—35,000 pounds Oiled Manila Tympan Paper; basis 24x36 inches, approximately 200 pounds. Rolls 38 and 48 inches wide; maximum weight 150 pounds. Reese & Reese, Inc., 6.80 cents per lb. 1 year.

No. 363—3,000 pounds Plate-Wiping Paper for embossing presses; basis 24x36 inches, 100 pounds. Rolls, 24 inches wide, 3-inch iron cores. R. P. Andrews Paper Co., 6.69 cents per lb. 1 year.

No. 364—4,000 pounds Back-lining Paper, for case-making machines; basis 24x36 inches, 180 pounds. Rolls 12 inches diameter, 24 inches wide, wound on wooden plugs, 1 or 1½ inch hole. Mathers-Lamm Paper Co., 3.44 cents per lb. 1 year.

No. 365—30,000 pounds High Finish Red Sulphite Paper; flat 24x36 inches, 320 and 400 pounds. Perkins-Goodwin Co., 5.378 cents per lb. 1 year.

No. 366—30,000 sheets Red Pressboard. Flat, 24x32 inches, thickness .0140 inch. Lowest bid rejected. R. P. Andrews Paper Co., $5.21 per 100 sheets. 1 year.

No. 367—20,000 sheets Gray Pressboard. Flat, 30x36 inches, thickness .0300 inch. All bids rejected.

No. 401—3,000 pounds News Board. Flat, 25x38 inches, No. 100. Rogers Printing Co., Baltimore, Md., 1.125 cents per lb. 6 months.

No. 402—800,000 pounds Chip Board; basis, 26x38 inches, No. 50. Flat, cut 21½x32½, 24½x38, 26x38, 8½x34½ and 32½x42½ inches. Rogers Printing Co., 1.125 cents per lb. 6 months.

No. 403—36,000 pounds Marble grained lined board; basis, 26x38 inches, No. 50. Flat, cut 22x32 inches. The Old Dominion Paper Co., 3.473 cents per lb. 1 year.

(Continued on page 60)

Demand for Paper Fairly Active in Chicago

Fine Paper Market Exhibits Strong Undertone, With Bonds and Ledgers, Books and Covers, Etc., In Satisfactory Request—Local Paper Merchants Endeavor to Stimulate Sales of Kraft Paper and Bags—Paper Stock Market Unchanged

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., February 1, 1932—Despite a seeming lack of basic evidence to support the belief, Chicago jobbers and sales representatives are inclined to be a bit optimistic about the present status of the paper industry in this locality. Demand in the majority of the lines is quoted as fair, the business coming in for repleted stocks holding up fairly well following the spurt shortly after the first of the year. An increase in prices, a strengthening here and there has made the outlook at least seem brighter than for some time.

Efforts are being made in the Chicago kraft market and bag market to stimulate sales on a par with the price increase in both kraft and bags as made by the manufacturers. Association activities here are directed toward this goal, although some feel that the market here is yet too stagnant to permit a quick return to improved prices in line with those of the manufacturers.

The fine paper market is reported as one of the best from the standpoint of improvement made, and bonds and ledgers, books and covers, and kindred lines have found a fairly steady demand from dealers who have permitted their stocks to decline to practically nothing. Ground woods have shown little tendency to strengthen yet, according to reports, the newsprint situation is reported to have clarified a bit and the market is practically unchanged over last week. Continued lack of business improvement prevents this market from feeling any greatly improved demand from newspapers. The waste market felt a slightly increased interest but remained practically the same.

Salesmen Prepare for Paper Week

The entire paper world might as well know now as later that the Salesmen's Association of the Paper Industry has designs on the program of Paper Week at the February meetings in New York City. And, with a nationally known speaker as the attraction at its annual luncheon meeting on February 17, the association seems to have a fair chance of attracting more than ordinary attention not only from salesmen but from paper executives as well. The speaker at the February 17 luncheon is to be Bishop George Craig Stewart, chaplain of the association, recognized in Chicago, and in his church, as one of the finest and keenest of speakers on business and world problems. The Bishop spoke to the salesmen in Chicago a year ago and the burning remarks he made then are still ringing in the salesmen's ears.

The Middle West Division of the Association is, of course, working hard to make Bishop Stewart's appearance at a national annual meeting a mighty big thing. J. H. Coy, Sr., is heading a big and apparently successful sales drive for attendance at the meeting, and when the "paper special" pulls out for the Eastern city a large delegation from Chicago is certain to be on board. At the Monday, January 25, meeting of the local division a motion was made and passed permitting Mr. Coy to mail out to various organizations the number of tickets to the annual luncheon that he believes they can or should handle. From the way George K. Gibson, Warren Moore and others hopped on the paste boards, the annual luncheon meeting in New York should be a real event, not only for the salesmen but for the entire paper industry. The appearances made by Bishop Stewart before business audiences are few and far between, but when he does appear this master speaker and scholar says more than enough to make up for his infrequent appearances.

Paper Merchants Discuss Price Situation

One of the most spirited and interesting meetings yet held by the Chicago Paper Association was that of Tuesday, January 26, when members of the association, with Walter Schulman, of Levin Brothers, presiding, discussed pro and con the matter of encouraging prices to a higher level in keeping with the recent advances in kraft and bag prices. During the round table discussion many of the members expressed a desire to see the price situation moved to a higher level so that the bag price on February 1 would be from 20 to 25 per cent advanced and the kraft situation improved on the $14.00 a ton advance on the part of the mills. Those who were not in favor of a wholesale agreement to work for this improvement indicated their belief that lack of demand in consumer markets in Chicago would not permit any effort to strengthen the market even in keeping with the improved situation. The consensus of opinion was, however, that members would endeavor to do their part in improving the market in an orderly manner and to report at the next meeting in February as to the success or failure of the program.

The members of the association were entertained by a moving picture produced by the Hoberg Paper & Fibre Company, entitled "From Evergreen to Evergreen." The movie traced the entire development of Hoberg products from the spruce seedling, through to its planting, the steps in its developments up until the time when the spruce was ready for cutting. Steps were then shown in the completion of the paper product—the cutting, loading to sleighs, flat cars, and to the mill, and the processes through which the timber went until the finished product resulted.

News of the Trade

An important barrier to the increased use of rotogravure sections in newspapers for national advertising, and a barrier that manufacturers of roto paper would like to see hurdled immediately, is the need for education among advertising agencies as to the technical requirements of this medium. This was the opinion brought out at the recent Chicago meeting of the Rotogravure Advertising Association. The Association plans to lay the matter before the American Newspapers Publishers Association with an announced view of "preparing and distributing among agencies a standard form of rotogravure information." The association has already, within the past year, made considerable progress in standardizing the column width of the rotogravure page at two inches.

The Appleton Coated Paper Company, Appleton, Wis., manufacturers of coated printing papers, has appointed Hurja-Johnson-Huwen, Inc., Chicago advertising agency, to direct its advertising account. The account will be handled from the agency's Chicago office, 58 East Washington street.

Canadian Pulp and Paper Men Meet At Montreal

Harold Crabtree Is Chosen to Head Canadian Pulp and Paper Association for Third Term at Annual Meeting on Friday—Technical and Woodlands Sections Meet on Wednesday and Thursday—Marked Confidence Manifested in Future

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., February 1, 1932.—The annual meeting of the Canadian Pulp and Paper Association was held here last Friday, being preceded on Wednesday and Thursday by the annual meetings of the Technical and Woodlands Sections of the Association. Both the general and the sectional meetings were well attended, and both served to show the strength of the association and the extent and usefulness of the many activities in which it is engaged for the benefit of the industry as a whole. This was particularly apparent on the technical side, a wide range of investigations being reported upon with a record of many conclusive results of the utmost importance in improving methods and developing new processes and products. The meetings greatly encouraged the members, and despite the many difficulties with which every branch of the pulp and paper industry is contending, the prevailing spirit was one of marked confidence and unabated faith. The proceedings ran smoothly under the general direction and oversight of the Secretary, A. E. Cadman, whose good work during the year was warmly acknowledged by the members. Harold Crabtree, who has proved a most acceptable and hard-working president during the past year, was unanimously elected to a third term of office.

The President's Address

Harold Crabtree, president, in his opening address, said: In spite of the many problems which your Association had to contend with during the past twelve months, it is gratifying to me to be able to report that as a result of the putting into effect of measures of economy in all departments in order to meet the situation created by reduced income, we have been able, not only to balance our budget, but to bring forward a surplus of $1,097.48. This has been accomplished without impairing in any way the service which your Association has been able to render to its members.

During the past twelve months your industry has passed through a trying period. Some branches of the industry have, fortunately for them, fared better than others, but generally speaking the entire industry has reflected the very difficult conditions which almost every phase of industry in Canada has been subjected to. Operations have been on a greatly reduced scale and prices in some of the branches were unstable, and not profitable. Not only was the domestic trade of Canada thus affected, but similar conditions, and in many cases worse conditions, in other countries, affected our export trade. International exchange became disorganized and the general financial and political situation throughout the world created uncertainty as to what the future might hold. Thus trade between the leading countries of the world declined considerably from previous levels and Canada's export trade alone fell off by more than one-third from the previous year as a result of the lessened demand and reduced purchasing power in foreign countries, and since by far the larger share of the output of the news print and wood pulp industry finds a market in countries outside of Canada, it has been affected more by the conditions in foreign countries than by domestic conditions. Prices of wood pulp have been forced down to a low point owing to intensive competition and lessened demand. Curtailment of production both in Europe and in Canada failed to help the situation very materially. The difficulties of the news print situation were aggravated during the year by a further falling off in consumption, which permitted the mills to operate at only 58 per cent of capacity, as compared with 69 per cent in 1930.

The fine paper mills reported a decline in their output for the year which mainly reflected conditions in Canada, since only small quantities of these grades are exported. Efforts are being continued to encourage the use of Canadian-made paper and additional lines are being added to the output of the fine paper mills in order to take care of the domestic demand.

The mills making wrapping papers, waxed papers, felts, tissues and other grades have all experienced more or less the same difficulties during the year. Conditions in the paperboard industry did not show any improvement over last year, notwithstanding an increase in the rate of duty on imported fiberboard from 25 to 35 per cent, which to some extent proved of benefit in curtailing importations, but not enough to offset the loss caused by the general slackness of business. The productive capacity of the board mills was increased during the year, which did not tend to improve the situation, but it is hoped that by united effort and co-operation this branch of the industry will become more stabilized during the coming year.

Many Brighter Aspects

Notwithstanding this picture, there have been many brighter aspects so far as Canada is concerned. Canada has probably suffered less than any other country from the effects of the depression, the banks of the Dominion have been able to weather the storms and maintain their position. The tariff changes put into effect during the year have been of assistance to Canadian industry, have been of benefit to labor and have caused a reduction in importations. A recent statement by the Department of Trade and Commerce at Ottawa says that, judging by the trend of Government statistics, Canada enters the new year with a feeling of quiet confidence and optimism which was not apparent at the beginning of 1931. There can be no doubt that when the upward swing does commence Canada is in a good position to take advantage of any improvement, and while no sudden rush of prosperity is looked for or desired, I believe we may claim that the worst is now behind us.

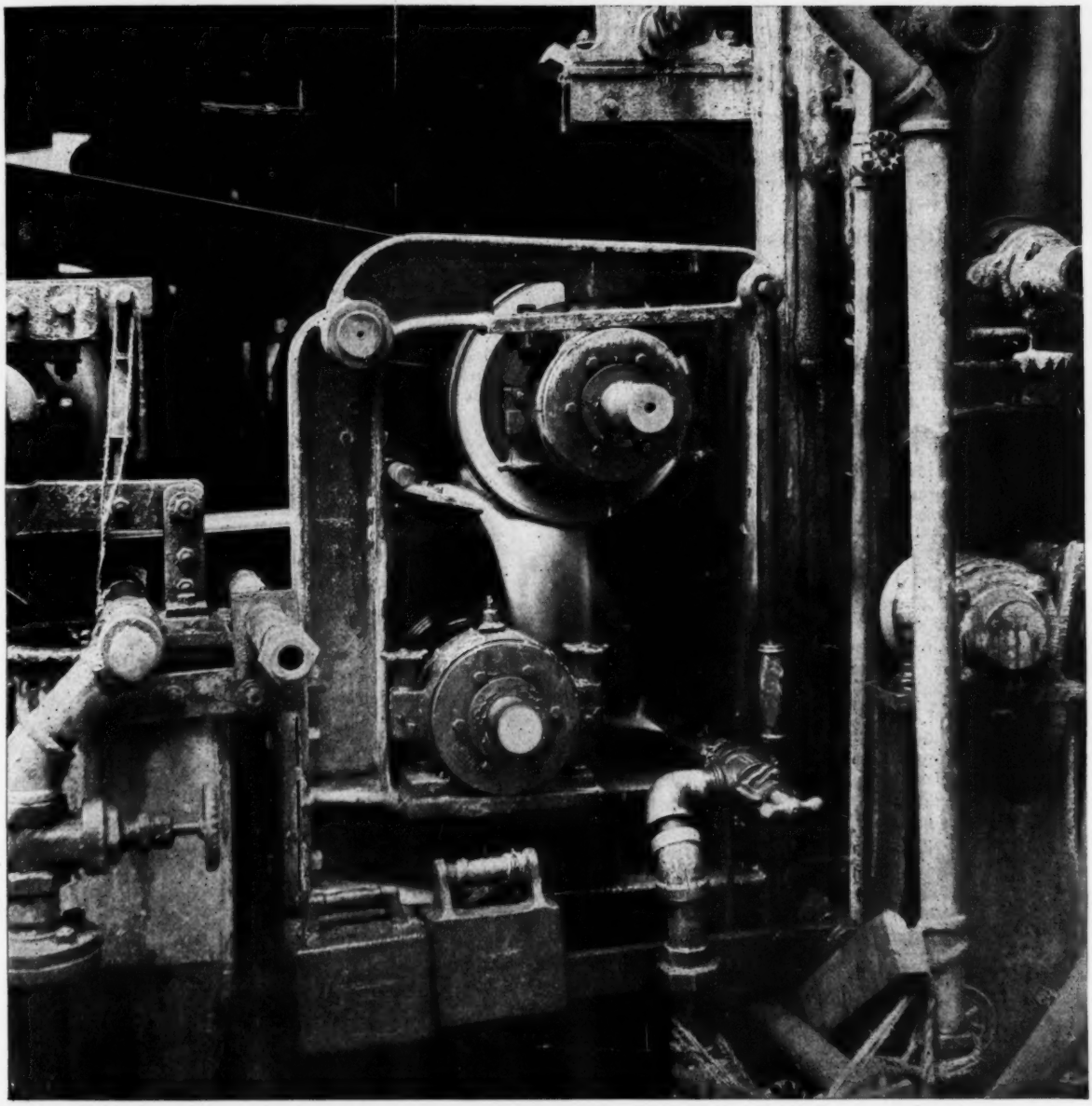
The work being done at the Research Institute is of great value to the industry. Efforts have been made during the past year to keep the executives of the industry more fully informed as to this work and I believe that it is beginning to be more widely appreciated by the industry. A variety of problems is dealt with by the research workers and close co-operation is maintained with the industry through the members of the Technical Section and the various committees set up for that purpose. The Joint Administrative Committee has reported that the organization is on a sound basis and that the principle of co-operation between the Government, the University and the industry seems to hold the greatest promise of results. The report of the chairman of the Technical Section draws

200 TONS-24 HOURS-120" TRIM

and the Superintendent says

"A Board Machine is not complete without an Extractor Roll"

HE HAS ONE — AND IT LOOKS LIKE THIS



DOWNINGTOWN

MANUFACTURING CO. — DOWNINGTOWN, PA.

attention to the difficulties under which the work has been carried on and to the necessity of co-operation if the activities of the Research Institute are to be of value to the industry.

Another Association activity to which your attention is drawn is the work of the Woodlands Section. The report of the chairman of that Section shows a year of valuable achievement in spite of adverse conditions. A great deal of investigative work has been carried out and we note with pleasure the willingness of the Government to co-operate with our members and to make expenditures for the benefit of the forest industries in general. Wood is our basic raw material and any investigation or research which can help to increase the efficiency of logging operations or lower the cost of wood is well worth while.

Membership in the Association has been well maintained during the year. Following the last annual meeting arrangements were made to permit of the manufacturers of wall paper becoming associate members of the Association and applications were accepted from Reg. N. Boxer Co. Ltd., Toronto; Stauntons Ltd., Toronto; Watson Foster Co., Ltd., Montreal.

Only one member resigned during the year, the St. Regis Paper Co., which is not operating in Canada.

Government Assistance

Acknowledgment is made of the assistance received by the industry from the Dominion Government during the year. The revision of the tariff imposed increased duties on certain grades of board, greeting cards, wall paper, blotting paper and wall-boards. These increases were of service to the industry in that the volume of importations was reduced and Canadian mills were able to compete in their home market on more favorable terms. The question of depreciated exchanges also had the attention of the Government and increased valuations were imposed in certain cases where prices of imported goods had been cut below reasonable levels. All this has called for greater activity on the part of the Customs officials, and our Tariff Department has been able to render good service. The Government has also been active in the improvement of trade relations between Canada and other parts of the British Empire. A new trade treaty was negotiated with Australia and has proven mutually satisfactory. Treaties with New Zealand and South Africa are under discussion and it is hoped that they will be successfully negotiated with advantage to both parties. The coming Imperial Economic Conference is regarded as marking a most important step in cementing Empire trade and we believe that in any form of reciprocal trade between the component parts of the Empire, the pulp and paper industry of Canada should receive full recognition.

It is with deep regret that I again have to record the death of several men in the industry. Mr. C. Howard Smith and Mr. Charles Riordon were pioneers in the industry who have left their impress upon it. Mr. Angus McLean was well known for his connection with the lumber industry and later with the pulp and paper industry. Mr. E. P. Cameron and Mr. O. F. Bryant were connected with the work of the Research Institute and had done valuable work for the industry. The industry has been particularly hard hit during the past two or three years and the removal by death of such well-known men leaves blanks which are difficult to fill. Our sincere sympathy is extended to all those who, with us, have suffered bereavement.

I feel it is my duty to refer to the splendid support and co-operation that the Association has received throughout the year from the Canadian Paper Trade Association and its members who are distributors of the product of the fine paper mills and also to the Coarse Paper Trade Council, distributors for the mills engaged in the manufacture of wrapping, tissue and miscellaneous grades. To the efforts of these associations is due, in a large measure, the maintenance of sales that these mills have had.

I also desire to express by appreciation of the work done by the officers and staff of the Association who have not spared themselves in coping with the great mass of work and the many problems with which the Association has been confronted during the past year.

News Print Section

John H. Price, chairman of the News Print Section, reported as follows: The year 1931 proved to be a most trying period for the news print industry. It was not found possible to devise a plan whereby a fair and economic price could be maintained.

Economic conditions throughout the world, and particularly in the United States, grew decidedly worse during the past year, and caused a further material reduction in the consumption of news print, based on the figures of 1930, amounting to 12 per cent. Production in Canada for the year amounted to 2,220,775 tons, which is a decrease of 283,372 tons as compared to the business done during 1930. The industry in Canada operated during the year at 58 per cent of normal capacity; again, a very unfavorable comparison with the production during 1930, when operations were at 69 per cent of capacity.

No new machines were brought into production during 1931.

Exports of paper for the years 1930 and 1931 were as follows:

News print	1931, Tons	1930, Tons
United Kingdom	104,027	121,494
Cuba	5,196	8,852
Jamaica	1,083	1,012
Argentina	44,295	63,980
Other Latin America	12,038	5,450
South Africa	14,744	14,877
Australia	29,502	44,838
New Zealand	14,673	19,795
U. S. A.	1,753,414	1,819,111
All other	29,265	6,107
Totals	2,008,237	2,105,516

It is no exaggeration to say that news print prices in all the markets of the world are unsatisfactory, caused by the most extreme competition, which, in turn, is brought about by over-production.

The very important part played by the news print industry in the affairs of this country should not be lost sight of. It is hoped that a solution of the many problems confronting it today will be found.

Board Section

K. S. MacLachlan reporting for the Board Section, said: In last year's report it was pointed out that the Canadian board plants were able to operate at only between 55 to 65 per cent of capacity, but it was hoped that conditions would gradually improve and that the board industry would show better results during the year to come.

Unfortunately, these conditions were not realized and the board mills can only report a fair business and that the general situation having greatly affected our production resulting in less tonnage shipped in 1931 than in 1930.

The past year also saw conditions in the board market in the United States get still further disorganized and ruinous prices established. Fortunately, the efforts of the staff of the Customs Branch of the Department of National Revenue proved beneficial in many directions in preventing excessive importations, coupled with the fact that there was a general revision of the tariff last June. In late months, also, the Government regulations respecting im-

portations from countries with an appreciated exchange also helped the situation.

Importations for eleven months 1931 amounted to 21,037 tons, as compared with 25,417 tons for the year 1930, and these imports accounted for 14¼ per cent of the Canadian consumption. Our efforts should be continued to reduce still further the volume of importations. One pleasant feature of the past year or two is the decrease in importations of finished paper boxes, cartons and containers, which this year show a decrease in value of over 55 per cent as compared with 1929 and 40 per cent as compared with 1930.

Capacity of Canadian board mills has been greatly increased during the period under review by improvements to many of our mills and by the placing of further new machines in production by two companies, the Bathurst Power & Paper Company and the Brompton Pulp & Paper Company. A further machine of the Beaver Wood Fibre Company will be in production early this year for Canadian consumption, and unless the demand for board greatly improves during the coming year it will be most difficult for our mills to run at over 50 per cent of capacity.

Such conditions as pointed out above make it imperative for the members to continue to show a united effort to stabilize the industry and to continue their co-operation to the Section, so that they will be prepared to meet any unfavorable conditions that might arise during 1932.

Waxed Paper Section

John R. Marshall, reporting for the Waxed Paper Section, said that any success within the industry this past year could be attributed to economies within, necessary to meet the shrinkage of volume and selling prices. The year 1932 held out very little hope of improvement in volume or selling prices, with a possibility of increased cost of production, but the members entered the New Year with a determination to surmount all difficulties within their control, confidence in the future of the country and hope for an early recovery of general trade conditions.

Felt Section

The manufacturers of building paper, W. E. Walker reported, had experienced one of the most trying times during the history of this industry. Mills were obliged to operate at from 25 to 30 per cent of production and at prices which were devoid of profit. Encouraging features, however, are at present as follows—very low inventories, production costs reduced to a minimum, raw materials at lower prices than they have been for many years, and a general feeling of optimism to the effect that the present depression has now passed its lowest point.

Coated Paper Section

F. C. McElroy, reporting for the Coated Paper Section, said the tonnage of the coating business showed a further decline in 1931. Also, in common with other commodity prices, the price of coated products had been reduced; this reduction in prices, however, had not stimulated business perceptibly, although it probably had had the effect of moderating the decrease in tonnage. He believed that progressive methods in marketing coated papers would be very beneficial and result in increased business to the industry over and above any general improvement which may take place. Further, there were opportunities today to replace coated products formerly imported by Canadian-made coated products.

Mechanical Pulp Section

A. Stewart McNichols, reporting for the Mechanical Pulp Section, said: Exports of ground wood from Canada for 1926, which may be considered a key year, and for the past three years, comprising the period of acute depression in the wood pulp trade, are given hereunder:

	U. S. A., Tons	U. Kingdom, Tons	Total, Tons
1926	258,527	109,957	382,078
1929	181,786	21,244	209,331
1930	193,759	15,000	208,759
1931 (eleven months)..	145,037	25,955	170,992

Declining consumption and intensive competition due to an installed grinder capacity, both in Canada and Scandinavia, substantially in excess of North American and European market requirements, have forced prices down to pre-war levels, thereby creating a grave problem for ground wood mills.

Expectations of an improved yield to Canadian mills on shipments to the United States from the premium on American funds did not materialize in practice, as Scandinavian producers made use of the prevailing premium on the American dollar in their own country to further reduce prices on offerings to the United States, with a resultant sag all around.

The ground wood situation in Norway and Sweden, following the break-up of the Scandinavian Cartel, has gone from bad to worse, and prices on the European market have reacted to new low levels.

It may be stated at this juncture that the market for ground wood seems at its worst for the obvious reason that it cannot be made worse. Whether relief will come through some freak of nature or from a general pick-up in business, is left for time to tell—but when such improvement does come it should be consistently borne in mind that independent ground wood mills, manufacturing for export a semi-finished and unwieldy product (containing more than 40 per cent of water) must henceforth be classed as uneconomical units, pertaining to the crude stages of pulp and paper undertakings, from which the business of paper-making is steadily emerging.

Tissue Paper Section

George Carruthers reported that the tissue paper mills had felt the effects of the generally unsatisfactory conditions but under the circumstances had done a fair business.

The tariff policy of the Government has been of assistance, and had substantially curtailed the importations of tissue papers and tissue specialties. The use of foreign tissues in Canada was still too high and every effort should be made to promote the use of made-in-Canada products.

There are now seven mills in Canada producing tissues, another company having entered this field during the past year.

Wrapping Paper Section

C. V. Caesar reported that wrapping paper shipments in 1931 amounted to 44,581 tons, as compared with 48,237 tons in 1930, or a decline for the year of 8 per cent. The period of anxiety had not been without desirable corrective measures, hurtful as they have been in many respects.

The relations between the wrapping paper mills and the various distributors and users had been reasonably satisfactory during the year and prices on the whole had been fairly well stabilized, but the price level had not been particularly remunerative to the mills, and the decreased volume had, of course, adversely affected both mills and distributors.

Chemical Pulp Section

F. G. Robinson, for the Chemical Pulp Section reported that prices held comparatively steady until early summer, when the European credit crisis became acute. Thereupon the price structure weakened steadily. From a tonnage viewpoint, the bleached sulphite branch of the industry was again able to report definite progress. Exports of this grade in the first eleven months of 1931 totalled 242,331

tons, as compared with 233,616 tons in the corresponding period of 1930. Exports of unbleached sulphite in the first eleven months of 1931 totalled 114,961 tons, as compared with 174,256 tons in the corresponding period of 1930.

The agreement to curtail sulphite pulp production entered into by the leading producers in Europe in 1930 continued in 1931. The 15 per cent reduction agreed upon was revised during the year to extend the 15 per cent reduction through to December 31, 1932, and to increase the curtailment by another 15 per cent from July 1, 1931, to June 30, 1932. Owing to the serious decline in demand, the benefits anticipated from this curtailment have not been realized. While present uncertainties did not warrant more than general predictions, the Canadian chemical pulp industry would undoubtedly maintain its relative position in the world markets and derive full benefit from the improvement that would accompany business recovery.

Book and Writing Section

Production of book paper during the year was approximately 14 per cent less than in the previous year and shipments were reduced in the same proportion, John F. Taylor reported. Exports of book paper from Canada are not large in any event, but in 1931 they were smaller than for some years past.

There was, fortunately, a decline in the volume of book paper imported into Canada during the year, although imports were still considerable and were a factor against which mills had to contend. The imposition by the Government of a duty upon foreign magazines and periodicals had resulted in decreased circulation of those publications in this country and it was hoped would prove of benefit to Canadian publishers. The fact that a number of magazines which were formerly printed in the United States are now being published in Canada was one of the results of the changed conditions which is directly advantageous to the Dominion.

Production of writing paper also declined during the past year, but to a smaller extent than was the case with book paper. Imports of this grade were lower as compared with the previous year, although appreciable quantities came in from the United States and from Great Britain.

Woodlands Section

Reporting for the Woodlands Section, J. D. Gilmour stated that a good deal of investigative work had been accomplished during the year, aimed chiefly at increasing the efficiency of woods operations so as to reduce woods costs. The subjects dealt with included the construction and use of logging dams; investigations of logging chutes, the efficiency of buck saws, the deterioration of pulpwood in storage, the feeding of men in the bush, the designs of booms, corduroy construction, employees' services in logging camps, extension of companies' control and operations in the woods, the functions of flumes, wood floatability and sinkage loss, year-'round logging, identification of peeled pulpwood, the use of motor trucks in the bush, pole roads, motor saws, the use of tractors in skidding and short distance hauling, sweeping operations, forest fire protection, and radiophones and bush telephones. The summer meeting was held at the scene of the Anglo-Canadian operations on the Montmorency river, the attendance being about 50. Mr. Gilmour added that the Section had a big field to cover and was in a position to render great service to the members of the Association. They believed their work had produced dividends for some years past, and those who knew best what work the Section had accomplished were unanimous in support of that work.

Technical Section

D. L. McLeod, for the Technical Section, reported in part as follows: The Technical Section is pleased to be able to report a year of steady progress, twenty-two new members having joined during the year. There were two deaths and four resignations, making a net increase of sixteen new members, which is very gratifying considering the difficult year the Technical Section has just passed through. The total membership now stands at 335.

As in the past, the Section has pursued the policy of assistance and support to the Research Institute through its various committees. The difficulties of the industry are reflected in the functioning of these committees and results have not been as satisfactory as had been hoped for. Co-operation on the part of some of the organizations also has not been all that it might have been in this direction. This situation is regarded very seriously by your Council, but we are unable to offer any suggestion as to a better form of organization. We wish to point out to executives of the industry that the success of the Research Institute, on which so much time and effort have been expended, will depend largely on its contacts with the industry through these committees, and we wish to ask for a greater degree of co-operation and support for these committees than we have enjoyed in the past.

An interesting and successful summer meeting of two days was held in Montreal at the Research Institute and was attended by nearly one hundred members. Papers were all given by members of the Institute staff and covered the work that had been done for the past six months of the year. A free and interesting discussion took place which was entered into very largely by the members present and which was, we believe, of great value to both the Research Institute and the Technical Section.

The Weldon Medal was presented to G. P. Genberg, of the Fraser Company, by the donor, Mr. A. L. Dawe, at a luncheon held during the time of the summer meeting.

Pulp and Paper Research Institute

Reporting for the Joint Administrative Committee of the Pulp and Paper Research Institute, F. A. Sabbaton said that during the year the Laboratory had lost through death the two men to whom we looked for most efficient technical work and executive guidance, E. Parke Cameron and O. F. Bryant, the latter being the technical director. Anyone who had come in contact with the work at the Laboratory during the past two years could readily appreciate what the dropping out of these exceptionally fine men had meant and how their plans for continuity of aims and efforts had been rudely upset. The Committee recommended to the incoming members of the Joint Administrative Committee that they endeavor to find a successor to the late technical director, who would be willing to, and capable of, handling this executive and technical function along exactly the same lines as those in which they were carried out under the regime of Mr. Bryant.

In spite of the severe changes that had occurred, the Laboratory had succeeded in doing a considerable amount of constructive and valuable work. Publications in the new form of Quarterly Reviews had been gotten out regularly and the Committee believed that these were appreciated and would be used by the technical men of the pulp and paper industry.

Industrial and Cellulose Chemistry

Harold Hibbert, reporting for the Division of Industrial and Cellulose Chemistry, McGill University, said work relative to certain fundamental aspects of the chemistry

of cellulose and wood had been carried out and published during the past year. He described brief work done in relation to the manufacture of cellulose ethers, the synthesis of silk fiber from sugar and on the physico-chemical structure of lignin, and gave a list of the Division's recent publications.

Forest Products Laboratories

J. H. Ross, reporting for the Division of Pulp and Paper, Forest Products Laboratories of Canada, said in part: The Division of Pulp and Paper commenced the year with an extensive program of research and with a year of excellent results behind it. The staff had at no time been adequate to the service which it was proposed to give to the pulp and paper industry, but the policy was to expand gradually in order to build up an efficient organization.

Instead of the expected increase in personnel, the number of technical workers in the laboratories was reduced owing to the economic crisis which faced the Government, and great loss had been sustained in the death of E. P. Cameron, the Director, and O. F. Bryant, technical adviser. Had it not been for the extreme loyalty of all members of the staff it is doubtful whether the research activities of the Division could have continued. There was an added burden on each and the successful publication of the Quarterly Review, although not so regular as in the preceding year, bears witness to the determination of the laboratories to continue their research program despite the serious losses which they had suffered.

The Professor of Physical Chemistry of McGill University assumed the burden of certain researches which it was not possible for the Division of Pulp and Paper to continue. Under the circumstances, the co-operation of Dr. Maass, the Professor of Physical Chemistry, has been of more than ordinary value to the laboratories.

Aside from its regular program of research, the Division of Pulp and Paper has carried out a series of investigations for the Committee on Physical and Chemical Standards, Technical Section.

Canadian Pulp and Paper Research Corp.

Reporting for the above, Harold Crabtree said: During the past year the interest charges on the outstanding bonds of the Corporation, including bank charges, amounting in total to $17,368.31, were met and bonds to the amount of $17,500.00 were redeemed in accordance with the trust agreement. The Corporation records its appreciation of the generosity of the following companies in offering bonds for sinking fund purposes at prices considerably below par: Abitibi Power and Paper Co., Ltd., Alliance Paper Mills, Canada Paper Company, Howard Smith Paper Mills, and Interlake Tissue Mills. As a result of the generous offers of these companies, the Association was enabled to benefit to the extent of $2,275.60. The par value of the bonds now outstanding is $280,000, redemption having proceeded at the rate of $17,500 per annum.

General Committee on Education

There had been very little activity in the Committee on Education this year, it was reported. This was partly due to the fact that the Chairman was working up a program with O. F. Bryant which was interrupted by his untimely death. One of the plans was the circulation of a questionnaire, by which the requirements of the industry could more definitely be known and courses modified in the schools for the development of those requisites. It was felt that the work on which Mr. Bryant was engaged had much merit and should be begun again. Individual reports for the schools at Edmundston, Three Rivers and Gardenvale were given.

Sectional Meetings—Important Development

The meeting of the Association paper was preceded during the week by the annual meetings of the Technical and Woodlands Sections. At the Technical Section's meeting the important announcement was made by Horace Freeman, president of the Sulphide Research Corporation, that Canadian pyrite ores had been used for the past week in the mills of the St. Lawrence Corporation at Three Rivers for the manufacture of cooking acid. This development, he explained, made it unnecessary to import brimstone any more from the United States. Mr. Freeman delivered a paper on "Pyrites in Canada," and told the members that the practicability of replacing brimstone imports with native pyrites had been proved and that the residue, after the sulphur has been removed, is practically pure iron ore possessing a considerable market value. Sulphur imports into Canada from the United States have amounted to $4,000,000 annually within the last few years.

Papers at Technical Meeting

Other papers read before the Technical Section were as follows: "Outline of Research on Problems of Interest to the Pulp and Paper Industry," by Dr. Otto Maass; "Recent Researches on Pulp Quality," by W. B. Campbell, Ph. D.; "Classification of Ground Wood by Selective Screening," by W. H. Johnston, Ph. D.; "Alkalinity in Bleaching," by F. H. Yorston, Ph. D.; "Pulping with High Concentration of Caustic Soda," by W. E. Adlington, M. Sc.; "Soda Process Variables and their Effect on Yield and Quality," by C. R. Mitchell, M. Sc.; "Forced Penetration of Liquids into Wood and its Relation to Structure, Temperature, Pressure, etc." by J. W. Sutherland and Dr. O. Maass; "Sorbtion and Natural Penetration of Electrolytes into Wood," by R. Richardson and Dr. O. Maass; "Review of Work on Problems in Cellulose and Wood Chemistry," by Dr. Harold Hibbert; "The Synthesis of Artificial Silk from Glucose," by J. Barsha; and "Southern Woods for Pulp and Paper," by Dr. Chas. H. Herty.

At the annual luncheon the speakers were Sir Arthur Currie, principal of McGill University, and Dr. C. E. K. Mees, director of research, Eastman Kodak Company, Rochester, N. Y. Sir Arthur Currie said some of the best minds in the country were trying to put the pulp and paper industry back on its feet, for, despite its long and depressing illness, it will, after convalescence, once more take up its rightful place among the great industries of Canada. And in its recovery the research worker will play a greater part than the company promoter.

The head of McGill University spoke of the splendid work which had been done by co-operation of the Federal Government, the pulp and paper association and McGill, in the work of the Forest Products Laboratories, which owed the impetus for its establishment to the Eddy bequest. The harnessing of the thoughts, ideals and vision of the university with the methods of industry had been eminently successful.

"It should not be necessary," pursued Sir Arthur Currie, "to plead for recognition of the value of research. Every worth-while industry maintains its research department and, sometimes, at considerable cost. In these days of rapid scientific development and ultra-keen competitive rivalry, no industry can afford to neglect, for one moment, any possible bit of education that can add to its efficiency.

"The discovery of new methods of manufacture, of new products of manufacture, of new uses for waste material, of new fields where the manufactured product can be applied, all may mean the difference between a profit and a loss."

Papers at Woodlands Meeting

At the Woodlands Section's annual meeting, the following papers were read: "Bucksaws' Efficiency—Mechanical Tests of the Forest Products Laboratories of Canada," by W. E. Wakefield; "Corduroy Roads," by G. E. LaMothe, Price Bros. & Co.; "Booms, Chain and Cable," by H. R. Soderston, Abitibi Power and Paper Company, and A. Koroleff, Canadian Pulp and Paper Association; "The Use of Tractors in Short Distance Deliveries," by P. Bedard, Abitibi Power and Paper Company; "Office Records of Construction Jobs," by F. R. Wilcox, Canadian International Paper Company, "Sweeping Operations—Reclaiming Wood Lost From Booms," by C. B. Davis, Abitibi Power and Paper Company; "Distribution of Moisture in Trees and Sinking of Pulpwood," by R. D. Gibbs, McGill University, and A. Koroleff; "Logging Dams—Construction and Use," by J. O. Wilson, Anglo-Canadian Pulp and Paper Mills; "Logging Flumes and Chutes," by A. Koroleff; "Feeding Men," by A. Koroleff; "Extension of Companies' Control and Operations in the Woods," by J. D. Gilmour, Anglo-Canadian Pulp and Paper Mills; "Employees' Services in Logging Camps," by L. A. Nix, Balhurst Power and Paper Company; "Cable and Chains," by C. D. Meals, B. Greening Wire Company, "Identification of Wood of Main Pulpwood Species," by J. D. Hale, Forest Products Laboratories of Canada and A. Koroleff; "Radiophones and Bush Telephones," by J. S. Richardson, Northern Electric Company; "Forest Schools Curricula and the Needs of Less Woods Operations," W. A. Delahey, Canadian International Paper Company; "A Basis for Measuring the Degree of Forest Protection," by B. Avery, Abitibi Power and Paper Company.

At the annual luncheon of the Section the speaker was Prof. F. E. Dozd, McGill University who dealt with the inestimable value of research. Incidentally he cited the amazingly longevity of the Douglas spruce and the Mexican cedar. A spruce has been found which was 3,200 years old and a cedar even older.

"Look back 3,200 years," pointed out the speaker to the members of the Woodlands division, "and you see Abraham leaving Ur of the Chaldes to start his pilgrimage. The lives and eposides of Jacob. Esau and Joseph; the founding of the Christian religion, and a host of wars, migrations and upheavals, have all taken place within the life of one tree in North America. It seems to point the finger of scorn at one of us who lives less than a century of, more or less, futile human existence."

Canadian Forestry Association

The annual meeting of the Canadian Forestry Association was held in Montreal during the week, when Frederick E. Bronson, of Ottawa, was elected president, succeeding R. O. Sweezey, retiring president. Robson Black, also of Ottawa, was chosen as vice-president, retaining at the same time his position of general manager of the association.

In a review of the year's activities, the retiring president held that the association's efforts are directed towards maintaining and improving the richest and most extensive forests in the world; richest, he averred, because they are coupled with the most extensive and valuable river and lake system in the world.

As a matter of great interest, Mr. Sweezey pointed out that the forests of the Province of Quebec alone are capable of supplying in perpetuity the present news print paper demand of the continents of North and South America, and still leave enough lumber for local requirements. During the past 25 years, Mr. Sweezey remarked that it has been his privilege to make field investigations of most of the forests areas of Canada, and he realized that the conservation of such a vast heritage and its proper and continuous utilization, is dependent upon an educated public opinion. "It is in this effort," he stated, "that the Canadian Forestry Association is earnestly engaged. We need 50,000 new members at once to assist us in carrying on."

Robson Black dealt with the active educational work carried on in forest regions during the year. He said the number of individually-paid membership showed a net increase in 1931 of 2,001. This, however, it was pointed out by Mr. Black, is modified by the fact that the bulk membership, paid for by individuals and corporations fell off to such an extent that the total of 32,000 members in 1930 dropped to 27,064 at the close of 1931. More individuals, however, became members of the association, or retained past membership than in any previous year. An increase in this respect was noted in every province. Membership income stood at $23,488 as against $28,484 in 1930, a decrease of $4,996.

Total expenditure in 1931 was $104,058.37 as compared with $141,814.36 for the preceding year, a decrease of $37,755.99.

Paper Mill Mutual Reports

BOSTON, Mass., January 30, 1932—At the annual meeting of the Paper Mill Mutual Insurance Company, held at its office in this city, President L. Henry Kunhardt, in presenting the annual report, called attention to the gain in ratio of assets to premium notwithstanding the unsatisfactory condition of business during the year and the unreasoning panic prices of securities. The following directors were elected: A. H. Lowe, president, Amoskeag Manufacturing Company; R. P. Snelling, Saco-Lowell Shops; Ellison A. Smyth, president Balfour Mills; David W. Lane, president emeritus; H. DeForest Lockwood; Charles Walcott, treasurer, Newmarket Manufacturing Company; Nathaniel F. Ayer, treasurer, Nyanza Mills, Cabot Manufacturing Company, Farwell Bleachery; Walter C. Heath, president, Whitehead & Hoag Company; Harry L. Bailey, Wellington, Sears & Co.; Bartow, Crocker, Burbank & Co., Association; George E. Spofford, treasurer, Edwards Manufacturing Company, Hill Manufacturing Company, Androscoggin Mills; James Duncan Phillips, vice-president and treasurer, Houghton Mifflin Company; L. Henry Kunhardt, president, Boston Manufacturers Mutual Fire Insurance Company; M. Lester Madden, president and general manager, Hollingsworth & Whitney Company.

Algonquin Paper Co. Elects Officers

OGDENSBURG, N. Y., January 31, 1932—The annual meeting of stockholders of the Algonquin Paper Company was held here last week at which directors and officers for the ensuing year were elected. The officers chosen are as follows: Frank A. Augsbury, president; Clarence Cook, vice president; William E. Westbrook, secretary and treasurer. The officers with Arthur Whalen and Willard E. Augusbury comprise the board of directors.

A meeting of the George Hall Corporation, a subsidiary of the paper company, was also held at which considerable business was transacted. Officers chosen are as follows: Frank A. Augusbury, president; Willard S. Augsbury, vice president; Hewlett P. Strong, secretary and treasurer. The officers with John A. Bovard and Albert Hutchinson are included in the directorate.

Consolidated Water Power & Paper Progress

Operations During Past Year Were Satisfactory, Since Company Was Enabled to Pay Regular Dividend of 6 Per Cent and Special Dividend of 4 Per Cent—Production of Four Mills to be Maintained At 85 Per Cent of Capacity During 1932

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., February 1, 1932—Operations of the four mills of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., will be on an 85 per cent basis during 1932, "realizing that the fullest possible operation of all the plants will yield the best results," according to the report of George W. Mead, president, submitted to the stockholders at the company's annual meeting last week. Mr. Mead is spending the winter at his Florida residence and the report was presented by Stanton W. Mead, treasurer. Concentration will be made more than ever on sales and high quality of product.

Operations during 1931 were productive of a satisfactory showing, since the company was able to pay its regular dividend of six per cent and its special dividend of four per cent.

All of the directors were re-elected; namely, George W. Mead, E. B. Redford, Stanton W. Mead, Theodore W. Brazeau, Walter L. Mead and Robert L. Kraus. Election of officers was deferred until Mr. Mead's return from the south. The company has mills at Wisconsin Rapids, Biron, Stevens Point and Appleton, Wis.

Threat to Pulp Industry

Wisconsin's $100,000,000 pulp industry is facing a crisis because of the depreciation of Swedish and Norwegian currency, according to E. W. Tinker, United States district forester located at Milwaukee. Leaders in the manufacture of pulp have conferred with him as to means of stopping the decline and only two solutions seem evident—an adjustment by Congress to equalize currency rates or an increase in the tariff on pulp.

Mr. Tinker points out that Scandinavian pulp mills are able to export their product to Atlantic seaboard cities in the United States for $25 a ton, while the lowest figure at which Wisconsin producers can get pulp to the same cities is $35 a ton.

Wisconsin's 35 pulp mills have an annual payroll of $2,000,000. They use each year 348,000 cords of Wisconsin hemlock and spruce and import an equal amount from other states. Salaries, wages and operating costs have been reduced to a minimum but still the problem is not met.

Currencies of the countries importing pulp have depreciated from 20 to 35 per cent since the gold standard was abandoned. The American dollar therefore buys one-fifth to one-third more in these countries, and the manufacturers have reduced their prices accordingly. The government's policy of removing the tariff on pulp in 1912 primarily to check the slashing away of American forests is now proving a serious threat to the pulp industry because of the inequalities of foreign competition.

Compulsory Unemployment Insurance

Development of systems of unemployment insurance in the paper industry and other lines of manufacture in Wisconsin is now compulsory. A law has been passed by the special session of the legislature just closing to this effect and it has been signed by Governor LaFollette.

Industries are required to set up reserves to insure their workers who receive less than $1,500 a year against idleness. Voluntary systems must be set up to cover at least 175,000 Wisconsin workers by July, 1933, otherwise a compulsory law will be placed in operation.

Under the compulsory plan, industries must contribute two per cent of their pay roll for two years to the state to build up insurance funds. After that period when the fund reaches $50 per employee the contribution is cut to one per cent and ceases entirely when the fund aggregates $75 for each worker.

A firm employing ten or more persons comes within the provisions of the law. When a worker is laid off through no fault of his own and has been a regular employee, he is eligible to receive weekly benefits not to exceed $10 and not for more than ten weeks in any year. Longer benefits can be extended if the worker has contributed to the reserve.

News of the Industry

After being shut down since January 1 pending negotiation of new wages agreements, the plants of the Appleton Wire Works and Wisconsin Wire Works, Appleton, Wis., have resumed operations. The employers proposed a wage cut of 15 per cent for the sixty employees involved but a compromise was effected whereby a 10 per cent cut is in effect for the first six months of this year, and a 12½ per cent cut for the next six months.

More than 300 persons attended the opening session of the annual safety school conducted at Neenah and Menasha, Wis. Fred VanLiew, of the Kimberly-Clark Corporation, acted as chairman. The speaker was George St. Thompson, Detroit, Mich., and his subject was "Safety in American Industry." Abolishing of "horse play" and careful instruction of new workers in safety methods were some of the points he stressed.

The Dells Pulp and Paper Company, Eau Claire, Wis., is the defendant in a rare type of court case pending at the present time. The state of Wisconsin, through the Wisconsin Conservation commission, has filed a suit for damages against the company for the loss of timber consumed in a fire in the southern part of Ashland county. The state contends the company was negligent and this negligence caused the fire and the consequent destruction of timber.

Case & Risley In Healthy Condition

A. C. Marshall, secretary of the Case & Risley Press Paper Company, makers of No. 2 press board and similar specialties, of Oneco, Conn., referring to a report circulated that his organization is in, or is having, financial difficulties, writes as follows:

"Case & Risley Press Paper Company, of Oneco, Connecticut, is not having financial difficulty, nor has it had since its organization. On December 31, 1931, we closed our books showing an actual profit with no accounts payable, no liens, mortgages, or other encumbrances on the property, which we own outright. We have ample tangible assets to meet all present requirements. We are inclined to believe that we are one of very few concerns who enjoys this healthy condition, and we take pride in it."

Pennsylvania Paper Mills Extend Operations

Manufacturers Now Maintaining Production on Average of From Four to Five Days Weekly —Slight Improvement Exhibited in Fine Paper Market, With Quotations Firmer— Better Demand Experienced for Various Coarse Paper Specialties

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 31, 1932.—While the paper trade finds slightly better demand but restricted distribution for specialties, there is a firmer trend in prices as a result of the recent advances in kraft. Fine papers show slightly improved conditions but continue to move in small lots to meet immediate needs. Like the wrapping paper division there are firmer prices after reductions announced earlier in the month. On the whole the price situation is most encouraging.

Manufacturers in the local field are extending operations as orders come slowly from dealers, who are replacing sold out paper stocks cleared during the inventory period. The average mill is now operating on from four to five days. Converters find orders confined to immediate needs but are having broader inquiries, which would indicate growing demand later in the season. Box makers and container producers are also among the allied trades showing betterment. Paper distributors handling boards and box makers supplies are increasing shipments but are still not holding to normal requirements of the early year. Paper stock is draggy and with lack of interest on the part of the manufacturers either in waste paper or rags there is little activity in any lines.

Paper Trade Association Elects Officers

Following the usual business session of the annual meeting of the Philadelphia Paper Trade Association, there was election of officers. Those elected were President William A. Hentz, D. L. Ward Company; Vice President T. H. B. Smythe, J. L. N. Smythe Company; Secretary Edward A. Keller, Garrett-Buchanan Company, and Treasurer M. K. Christine, Raymond & McNutt Company. The retiring officers are W. S. Wilcox, Wilcox Walter Furlong Company; N. A. Considine, Paper House of Pennsylvania; Charles Wilder, Wilder Bros. Mr. Wilcox was elected delegate for the Fine Paper Division to the National Association Convention, while T. H. B. Smythe was elected delegate for the Wrapping Paper Division.

Wholesale Waste Merchants Plan Banquet

Members of the Philadelphia Wholesale Waste Merchants Association met on Thursday evening and arranged for the annual banquet and get-together, to be preceded by election of officers, to be held April 6 at the Lorraine Hotel. The last meeting at the Lorraine Hotel was one of the best attended sessions this season and following dinner there was nomination of officers to be elected at the April banquet. These were renominated: President Thomas A. Kenny, International Trading Company, for the fourth time successively in office; Charles McNichol, for the fourth time to hold the office of vice president; while William J. McGarity, Sr., Pen Paper and Stock Company, was nominated to serve his ninth term as secretary, and William L. Simmons, John Simmons Sons' Company, to be re-elected for the 26th year to serve the office of treasurer. These were nominated to the executive committee: Harry Bailey, Hemmingway Company; Dominic DiSanti, Alex DiSanti and Son; George French, Castle and Overton; William Lemly, Jr., Samuel Ingber, Samuel Ingber & Co.; George A. Di Ienno and Isaac Beitchmann, Beitchmann Bros. These were nominated to the banquet committee: William J. McGarity, Sr., chairman; P. Sullivan, William L. Simmons, Dominic DiSanti, George Di Ienno and George French.

N. L. Nourse Talks on Paper

Newton L. Nourse, director of the technical service of the Brown Paper Company, Portland, Me., gave a talk on "The Results of Recent Studies on Permanency of Paper" at the January meeting of the Philadelphia Club of Printing House Craftsmen. He gave an outline of the characteristics of cellophane as a pure cellulose product mixed with special alkali solution spread out and then given an acid bath. He pronounced cellophane as composed of cellulose molecules, the fibers having disappeared in the process of manufacture. He stated that research on permanency of paper is going on all the while and gave information of accelerated tests used in which in 24 hours there can be produced the same causes and effects that it would take the slower process of nature to require a hundred to two hundred years. The speaker conducted an open forum questionnaire.

Keasby & Mattison Feature New Department

A. B. Spaulding, who was former assistant manager of the Philadelphia branch of the Keasby & Mattison Company, has been transferred to the Ambler, Pa., headquarters of the company, as manager of the Public Utilities Department organized to feature asbestos products for the electrical and utilities industries, such as asbestos electrical panels, switchboards, asbestos boards for fireproof partitions, tapes, etc. The Central Asbestos and Magnesia Company, 214 Grand avenue, Chicago, has been appointed an approved contractor for insulation of the Keasby & Mattison Company, in that territory. John R. Livezey has been approved in similar capacity for the Philadelphia section and will continue to handle the Armstrong Cork Insulation business as formerly.

Aetna Insulations Changes

Following the change in its firm title to Aetna Insulations, from its former name of the Aetna Asbestos Insulation and Roofing Company, with the current year, the company announces perfection of a new type of home insulation which it distributes. The name of this new insulation material of asbestos composition is Sprayo Flake Insulation, which augments a full line of insulation products carried by the company. Another new product is a wood preservative and treatment to make wood fire resisting. The president of the company, Arthur I. Rank, announces perfection of other asbestos products and fire resisting treatments for fiber paper and allied products.

Electric City Paper Mills Buys Plant

NIAGARA FALLS, N. Y., January 30, 1932—The Electric City Paper Mills, Inc., has purchased the mill of the Burkhardt Paper Company at this place about the first of the year. Since acquiring the property the new company has made quite a few changes in the equipment and the executive personnel has been changed completely. M. Rivkin is manager of the new company.

Canadian Paper Box Makers Plan Convention

Annual Event Scheduled for Bigwin Inn, Lake-of-Bays District, June 20 to June 22, Inclusive —Edward Collett, of Collett & Sproule, Elected Chairman of Toronto Carton Council— Bart Sproule Reviews Past Year's Activities

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., February 1, 1932—Meeting in annual session in Toronto on January 7, the Toronto Carton Council elected Edward Collett as chairman of the organization for 1932 in succession to Bart Sproule. Both retiring and newly elected chairmen are members of the firm of Collett & Sproule, paper box manufacturers and are widely known in the paper box industry throughout Canada. Previous to the meeting the directors of the Canadian Paper Box Manufacturers' Association met and decided on the date of the annual convention of that organization. This will take place at the Bigwin Inn, in the Lake-of-Bays district June 20 to June 22, the dates and place having been decided upon the result of last year's successful convention at the same popular resort.

Bart Sproule Expresses Optimism

In his annual address Bart Sproule, the retiring chairman, dwelt upon the activities of the Council during the past year and took a hopeful view of the outlook for the industry during the current season. "We have just passed through a very trying period," he said. "Perhaps many are viewing the coming year with grave concern. But there are hopeful signs for the future. Canada this year, despite its trials, has become the focus point of the world's trade eyes. We are now the second largest producers of the world's gold supply and the largest producer of nickel. Our banks are the custodians of $1,500,000,000 of the savings of Canadians, and we have a clean sheet as compared with the four thousand bank failures experienced in the United States since the onset of the depression. The unfavorable trade balance of 1930 has been converted to a favorable balance in 1931. Employment has been better maintained in the Dominion than in any other country in the world. Over one hundred new industries have made their domicile in Canada during the past twelve months—all being ventures of organziations already manufacturing in other countries.

"We have no reason to be down-hearted at our position today. On the other hand, we should not allow ourselves to bee too optimistic. We cannot expect conditions to change over night. The process is likely to be slow. We must realize the necessity of going ahead slowly and maintaining our equilibrium during the transitory stages. We may congratulate ourselves on the friendly relationship existing today, and we must do nothing to jeopardize that spirit tomorrow."

Entertainment Committee Appointed

Announcement of the dates for this year's convention created a good deal of enthusiasm and committees were struck to manage the affair. F. W. Fisher was elected chairman of the entertainment committee, and he will have with him A. B. Meredith, while John W. Hewitt will look after the golf activities. At the meeting of the Council, F. A. Fielder conducted Everybody's Hour and entertainment features included a dinner and bridge in the evening at the King Edward Hotel, an address by the Rev. W. J. Johnston, Toronto, and other interesting items. It was shown by F. W. Fisher, who submitted a report, that the industry has had a good year from an accident prevention standpoint, and a report by the secretary, C. V. Hodder, contained many constructive ideas for the suggested guidance of the membership during the present year.

D. F. Brown Celebrates 96th Birthday

D. F. Brown, founder of the D. F. Brown Paper Box Company, Coldbrook, N. B., manufacturers of paper boxes and cartons, recently celebrated his 96th birthday at his home in St. John. Last year he supervised the installation of a new heating plant in the factory and although active control of the company is now in the hands of his son, C. Winter Brown, Mr. Brown Senior is still hale and hearty and retains an interest in the plant activities. While repairing the roof of his house last year, Mr. Brown fell twenty feet and recovered from his injuries in a couple of weeks.

Notes and Jottings of the Trade

Fred L. Ratcliff, head of the Ratcliff Paper Company, Ltd., York Street, Toronto, was elected to the board of the Canadian National Exhibition representative of the Toronto Board of Trade at the annual meeting of the latter body—a position he has occupied for some years.

The erection of a factory for the manufacture of paper boxes and cartons in Montreal is contemplated by the London Paper Box Company, of London, Ont. The company has purchased a site and while definite decision as to the expansion has not been reached it is stated that work will go on in the spring.

The Glen Miller paper mill at Belleville, Ont., is again operating at full strength after a considerable lay-off. The plant was established fifty years ago. Starting January 1 again it is now operating 24 hours daily and is expected to keep up that schedule until June.

L. A. Blenkarn has been appointed manager of J. H. McNairn, Ltd., manufacturers of waxed papers and other products, at No. 7 Jarvis street, Toronto, in succession to the late W. A. Miller. Mr. Blenkarn is widely known in paper circles in Ontario.

St. Regis Chooses Directors

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., January 30, 1932—The annual meeting of the St. Regis Paper Company was held here recently at which directors for the year were chosen. The directors elected include D. M. Anderson, B. B. Taggart, D. C. Middleton, of Watertown, and Floyd L. Carlisle, C. E. Norris, R. R. Maltby, C. K. McMillan, P. N. Gray, R K. Ferguson, J. E. Bulkley and W. K. Dick, of New York City. Among the directors that passed away during the past year were John N. Carlisle and A. H. Miller. The only new director named was C. R. McMillan, who recently severed connections with the Union Bag and Paper Corporation. H. E. Machold was re-elected chairman of the board.

Announcement was made that there are several vacancies on the directorate and that the annual meeting of the board will not be held until after the annual statement of the company has been published. The meeting will probably take place next month at which officers for the year are expected to be named.

Program for Paper Week, February 15–18, 1932

American Paper & Pulp Association Announces Tentative Schedule of Meetings for 55th Annual Convention, to be Held at the Hotel Pennsylvania, New York—Annual Meeting of Association to be Held In Banquet Hall, Thursday, February 18

Monday, February 15, 1932

Forenoon

10:00 Joint Meeting: Fibrous Raw Material Committee TAPPI and Pulpwood Department, A. P. & P. A.
10:00 Cost Department, A. P. & P. A.

Afternoon

12:30 Standardization Committee (Luncheon)
2:00 Joint Meeting: Fibrous Raw Material Committee, TAPPI and Pulpwood Department, A. P. & P. A.
2:00 Cost Department, A. P. & P. A.

Evening

6:30 Central Research Committee (Dinner)

Tuesday, February 16, 1932

Forenoon

8:00 Committee on Statistics (Breakfast)
9:30 Technical Association (General Session)
10:00 American Waxed Paper Association
10:00 Cost Department, A. P. & P. A.
10:00 Cover Paper Manufacturers Association
10:30 Salesmen's Association of the Paper Industry

Afternoon

12:30 Cost Department, A. P. & P. A. (Luncheon)
12:30 Salesmen's Association of the Paper Industry (Luncheon)
1:00 Engineering Department, A. P. & P. A. (Luncheon)
1:00 Empire State Forest Products Association (Luncheon)
1:00 Paper Makers Advertising Club (Luncheon)
2:00 Technical Association (Group Meetings)
2:30 Cost Department, A. P. & P. A.
2:30 American Waxed Paper Association
2:30 Writing Paper Manufacturers Association (Sulphite Bond Division)
3:00 Writing Paper Manufacturers Association (Finance Committee)

Wednesday, February 17, 1932

Forenoon

8:30 Writing Paper Manufacturers Association (Executive Committee-Breakfast)
9:30 Cardboard Manufacturers Association
9:30 Technical Association (Group Meetings)
10:00 American Waxed Paper Association
10:00 Bristol Board Manufacturers
10:00 Writing Paper Manufacturers Association
10:30 The Kraft Institute
10:30 Pulpwood Department (Pulp Manufacturers)

Afternoon

12:30 American Waxed Paper Association (Luncheon)
12:30 The Kraft Institute (Luncheon)
12:30 Technical Association (Committee Chairmen, Luncheon)
2:00 The Kraft Institute
2:00 Technical Association (Group Meetings)
2:00 Tissue Paper Manufacturers Association
2:30 Pulpwood Department (Pulp Manufacturers)
2:30 Writing Paper Manufacturers Association (Rag Content Division)
6:00 National Paper Council (Dinner)

Thursday, February 18, 1932

Forenoon

9:30 Gummed Industries Association
9:30 Technical Association (Group Meetings)
10:30 American Paper and Pulp Association—Annual Meeting

Afternoon

1:00 Binders Board Manufacturers Association (Luncheon)
1:00 Technical Association (General Association Luncheon)
2:30 American Paper and Pulp Association—Annual Meeting

Evening

7:00 American Paper and Pulp Association—Reception
7:30 American Paper and Pulp Association—Banquet

Wood Pulp Manufacturers Meetings

Wood pulp manufacturers will hold a meeting during Paper Convention Week on Wednesday, February 17, in Parlor "C," Hotel Pennsylvania. The program is divided into two sections. The morning session will be devoted to association services to the pulp manufacturers, and the afternoon session will be given over to a discussion of competitive conditions in four pulp producing regions, to be followed by a discussion of competition from countries with depreciated currency.

American pulp manufacturers are facing heavy competition from countries that are able to undersell American markets because of advantages in exchange rates. For many domestic producers the situation has become critical. This meeting affords an opportunity for the manufacturers to discuss frankly and honestly the situation as it affects their own operations and as it has led to reactions in paper prices. The program of the meeting follows:

Wood Pulp Statistics—J. A. C. Kavanagh, Statistical Department, American Paper and Pulp Association.

Pulp Mill Waste Disposal—C. M. Baker, Engineering Department, American Paper and Pulp Association.

Costing Pulp Manufacture—T. J. Burke, Cost Department, American Paper and Pulp Association.

Survey of World Pulp Production and Exports—Charles W. Boyce, secretary, American Paper and Pulp Association.

Summary of Pulp Testing Committee Work of the Technical Association of the Pulp and Paper Industry—Maxamillian Krimmel, President, TAPPI.

(Continued on page 58)

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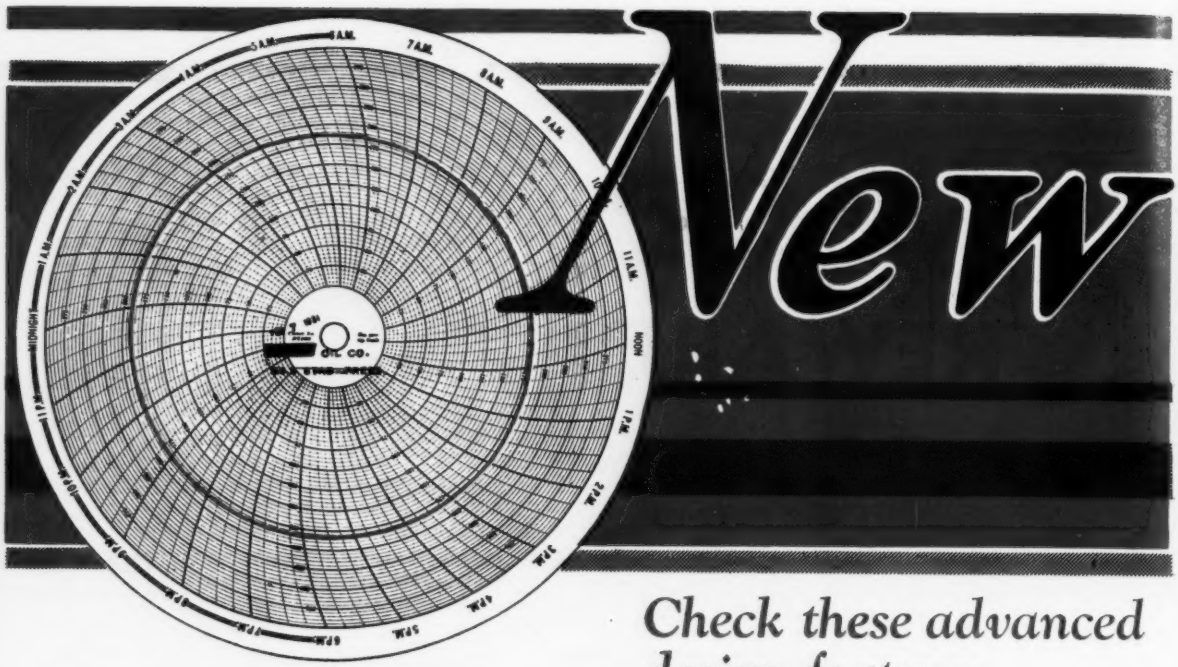

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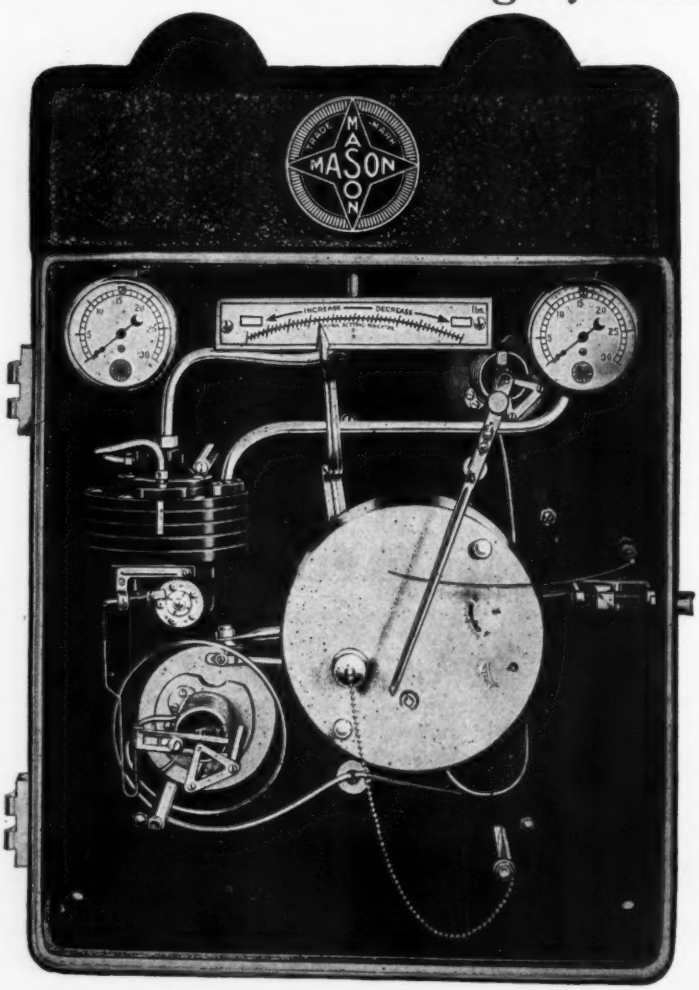

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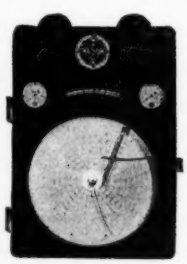

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COMING EVENTS

American Paper and Pulp Association, fifty-fifth Convention and Meeting. Pennsylvania Hotel, February 15-18. Annual Meeting, Thursday, February 18. Annual Banquet, Grand Ball Room, Thursday, February 18.

National Paper Trade Association of the United States. Convention, Pennsylvania Hotel, February 15-17. Luncheon, Wednesday, February 17

Technical Association of the Pulp and Paper Industry. Convention, Pennsylvania Hotel, February 15-18. Luncheons, Wednesday, February 17 and Thursday, February 18.

Salesmen's Association of the Paper Industry. Annual Meeting, Pennsylvania Hotel, Tuesday, February 16. Luncheon, Tuesday, February 16.

New York Association of Dealers in Paper Mills' Supplies, Annual Banquet, Hotel Commodore, Wednesday, February 17.

MANAGERIAL CONTROL

Manager—the word has a new significance of power and responsibility in the present business cycle. A new type of managerial executive is looming large on the business horizon. Management has become a specialized career.

Speaking before the New York Chapter of the National Association of Cost Accountants Mr. Thomas R. Jones, vice president of the Harris, Seybold, Potter Company, the widely-known machinery manufacturing concern of Cleveland, Ohio, stated that management does not control the factors entering into the budgeting of materials and labor directly but controls it through: 1. The man on the drafting board—the man who designs the product. 2. The man who plans time studying—the man who establishes time standards. 3. The foreman in control of the job.

Management must, however, set standards for the personnel. It must give them the goal at which to shoot. There should be measurements to judge the progress of the work from time to time. There should be definite financial standards. All business is conducted in terms of monetary units. In this country the unit is the dollar. Therefore, the standards should be set in dollars.

The flow of materials and the control of inventories should be watched closely. Engineering and shop standards should be established. The methods pursued by the whole organization in working on one transaction should be painstakingly studied before standards are set. The quality of the product should be controlled by paralleling the standards for the control of labor with the standards for material. There is a focal point for every item to be controlled in an organization setting standards and budgeting. The tendency of the budgeteer is to figure what he is going to spend and not what he has to spend. There are three major pitfalls in the creation of a budget. 1. The method of calculation of the budget. 2. Expansion and contraction through variation in production, etc. 3. Careless operation.

Management must be consistently on its toes and watch everything. It must determine the peak and the low point of the budget before starting. It must determine how much is to be spent on each department. It must first determine the percentage of profit. The net profit of any larger budgeted production would be greater as fixed charges would not increase in proportion to volume.

Since expenditures tend to override your income, you must get the engineering department to produce the goods at the price fixed in the budget. Management must be hard-boiled. Its guiding records must be kept up to date for, as a record gets older it gets less valuable. The only real valuable records are immediate ones.

Engineers should be trained to do what the management wishes them to. Engineers should be taught industrial economics. They should be familiar with the practices of their own shop including machine shops, foundries, etc. They should know the relative costs of the operations of those shops compared with those of like industries. Any company is in a merchandising business and all the elements must fit together harmoniously to get minimum cost. Take a company making five machines with a certain part made differently for each machine. They could design a part that would fit all five machines at possibly a higher cost in one or two cases but by standardization they would eliminate jigs and special tools, job order books, store records, store bins, etc.

There are other advantages of standardization—lowering of direct costs from larger quantities. The lowering of direct costs from simplification of patterns. Increased flexibility due to the removal of guess work as to volume and a multiplicity of designs from the shop. Draftsmen must be thoroughly informed as to the type of product desired and must work for the same standard result. Designers and stylists must concentrate their efforts in the creation of new ideas. The product must be simplified through the use of standard designs.

Setting standards is determining the one best way to manufacture to meet market requirements.

There is very little you can do with the inventory to control it, once accumulated. It must be done in other ways. One must get behind the records and establish control of the factors making them up. Some of the factors are: 1. Amount of finished stock required by customers. 2. Diversification of product. 3. Length of time necessary to secure raw materials, etc.

Large inventories are not indicative of good business. They tie up working capital necessary to run the business. They are always subject to depreciation—iron and steel rust—foodstuffs deteriorate.

Obsolescence may arise because of changes in the product of competitors. The merchandising policy should, therefore be closely controlled. Consumer demand varies and stock should be dumped as soon as you have a change in consumer demand, for a different line of product.

The direct factors of labor control are: 1. Shop analysis. 2. Time studies. 3. Wage incentives. 4. Job analysis, etc.

All effort applied in any other way than actual production of product is waste and should be minimized. Waiting for forms, waiting for tools, repairs to machines, work done by day work and not on standard is partly waste. The standard time for jobs including set-up time should be studied carefully giving due allowance to the factors, etc. We cannot cut these necessary costs to a minimum unless they are segregated. The pertinent factors having to do with control of materials are factors right out in the shops. The whole efficiency of business rests on management for they control the men on the machines and can establish standards to see that they do their work with the proper efficiency.

Leonidas Edward Jonte Dead

Leonidas Edward Jonte, better known to his friends as Lea Jonte, passed away at his home in Green Bay, Wis., on January 13. Mr. Jonte was assistant general superintendent of the Hoberg Paper and Fibre Company, Green Bay, Wis. He was born January 6, 1898, at Wewaunee, Wis. and graduated in 1921 as a mechanical engineer from Purdue University. Prior to going to Hoberg, Mr. Jonte was an engineer on the emergency staff of the Green Bay Dry Dock Company, dealing with problems in steam, steel construction, hydraulics, etc. In 1924 he went with Hoberg as an engineer.

For the past two years Mr. Jonte was chairman of the Acid Pulping Committee of the Technical Association of the Pulp and Paper Industry, in which position he was an enthusiastic leader and was doing much to raise the standard of the association meetings dealing with the sulphite manufacturing interests of the industry.

Bids and Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 3, 1932—The Government Printing Office has received the following bids for 2,000 pounds of plate wiping paper; Link Paper Company, at 6.85 cents per pound; Whitaker Paper Company, 7.19 cents; Barton, Duer & Koch Paper Company, 7.5 cents; R. P. Andrews Paper Company, 6.69 cents; and Mathers-Lamm Paper Company, 7.7 cents.

The R. P. Andrews Paper Company has been awarded the contract for furnishing the Government Printing Office with 5,000 pounds of 26 x 38, No. 50 lined chipboard at 1.75 cents per pound, bids for which were received on January 15.

The same company will also furnish 3,000 pounds (24,000 sheets) of 20 x 25 125 lbs., 50 per cent rag gray laid cover paper at 10.4 cents per pound, bids for which were received on January 18.

Beckett Paper Co. Makes Improvements

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, February 1, 1932—The Beckett Paper Company of Hamilton has decided to proceed at once with an expenditure of $100,000 for the enlargement and improvement of the company's manufacturing equipment; action having just been taken at the annual meeting.

The expenditure will be devoted entirely to the rebuilding of the paper machines into larger, faster and thoroughly modern paper manufacturing equipment. Machine No. 1, which is devoted largely to the making of the company's famous lines of cover paper will be widened from 66 inches to 81 inches. Additional rolls, driers, etc., will make possible additional speed. Surface sizing equipment, a suction roll and driving appliances of the most approved design will be installed. With the completion of this work The Beckett Paper Company will have one of the most efficient cover paper machines in the world.

Machine No. 2, which is used largely in making the company's text, offset, envelope, papeterie bond and writing paper lines, will be so enlarged as to greatly increase its speed of effective operation.

Contracts for this important work will be doubly beneficial to Hamilton and Butler county inasmuch as practically all the work will be done by The Black-Clawson Company, of Hamilton and its subsidiary, the Shartle company, of Middletown.

For many years The Beckett Paper company has been largely known through its famous product Buckeye Cover. During recent months there has been a large extension of its proprietary lines, which now include Buckeye Cover, Buckeye Text, Buckeye Custom Cover, Buckeye Duplex Cover, Beckett Cover, Beckett Text, Beckett Offset and Beckett Greeting Card stock. In addition the company manufactures for its customers a large variety of bond, writing envelope, tablet and box stationary papers, which are sold under the private brands of paper merchants in all parts of America. No specialty mill in the United States now offers a more complete line of papers.

Extension of the company's activities in the foreign field, particularly in South America, is also planned through connections recently made with one of the leading New York export houses.

The annual meeting of the company's stockholders, preceded the meeting of the directors. At this meeting the following directors were elected for 1932: Mary M. Beckett, Guy H. Beckett, Don W. Fitton, Frank J. Becker, Brandon R. Millikin, H. H. Latimer, C. R. Greer and Rose Brede.

The directors re-elected the following officers: President, M. M. Beckett; vice president, Guy H. Beckett; secretary-treasurer, F. J. Becker.

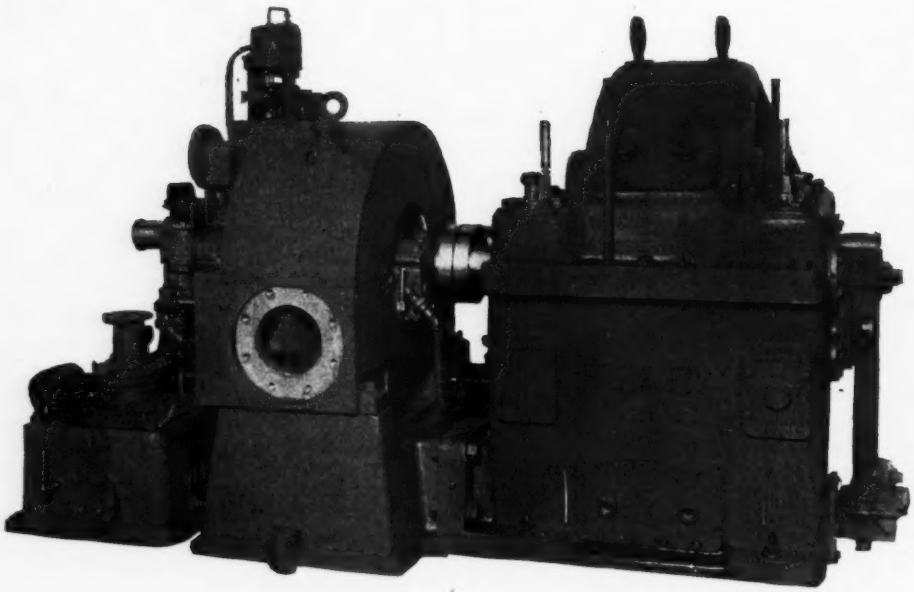
Reports showed that, despite the most difficult industrial conditions prevailing, the operations of the company for the year showed a profit. The usual dividends on both common and preferred shares were declared, and a thoroughly sound financial condition was disclosed. The Beckett Paper company is now completing its 84th year of successful operation and is one of the oldest business institutions of Hamilton.

Bill to Regulate Envelopes

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 3, 1932—Representative Hogg of Indiana has introduced a bill in the House, which has been referred to the Committee on Post Offices and Post Roads "to regulate the manufacture and sale of stamped envelopes." The bill is similar to the many introduced in former Congresses.

TERRY



Terry Turbo-Gear Unit equipped with variable speed governor, remote speed control and remote emergency trip.

TERRY VARIABLE SPEED TURBINES—

— Are the result of many years of experience in supplying variable speed drives for paper machines — a service that is extremely exacting due to the accurate governing that is required at all speeds.

These units employ the Terry Hydraulic Fluid Type Governor. A typical application is shown above. This is a 400 H.P. turbo-gear set designed to operate over a 6 to 1 speed range. Any turbine speed from 700 R.P.M. to 4225 R.P.M. can be obtained while the unit is in operation.

Terry engineers will be glad to give you full details of Terry variable speed turbines. Horsepowers and speeds required, as well as steam conditions and type of driven apparatus should be stated in all inquiries.

The TERRY STEAM TURBINE COMPANY
TERRY SQUARE, HARTFORD, CONN.
Steam Turbines - Gears - Shaft Couplings

T-1083

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

The National Research Council, 21st and B Street, Washington, D. C. through Dr. Clarence J. West, extends the courtesy of its photostat service to members of the Technical Association of the Pulp and Paper Industry. Owing to a limitation of personnel and time, this service cannot be extended to non-members.

The charge for the photostat service is: 9 x 11 inches—18 cents per page, 18 x 11 inches—35 cents per page, 22 x 18 inches—70 cents per page, minimum charge, 50 cents.

Payment should be made upon receipt of invoice.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Bleaching

Bleaching of Ground Wood. H. Postl, Vienna, Wochbl, Papierfabr. 62. No. 16 (April 18, 1931).—The first mention of the bleaching of ground wood was in a book appearing in 1877 when sodium sulphate was used. Later sodium bisulphite and hydrochloric acid was used in the proportion of 3 to 5 kilograms of sodium bisulphite of about 60 per cent and 300 to 500 grams of hydrochloric acid per 100 kilograms of ground wood.—J.F.O.

Bleaching Pulp. Erich Opfermann assignor to I. G. Farbenindustrie Aktiengesellschaft. U. S. pat. 1,801,876 (April 21, 1931).—Cellulose material to be bleached, such as pulp for use in rayon manufacture, is mixed with about 1 per cent of caustic alkali or a hydroxide of an alkaline earth metal or magnesium, and then treated with bleaching liquor such as chloride of lime to obtain a pure white product having a copper number not exceeding about 1 per cent and having at the most about 6 to 9 per cent of constituents soluble in sodium sulphide.—A.P.-C.

Bleaching Cellulose Fiber. George A. Richter assignor to Brown Co. Can. pat. 312,333 (June 16, 1931).—Cellulose pulp is bleached in hypochlorite bleach liquor and the bleached pulp treated in aqueous suspension with dilute permanganate solution. The pulp is then treated with a hot solution of sodium sulphide to remove manganese dioxide resulting from the reaction of the organic reducing materials in the pulp and the permanganate, and the resulting product is finally treated with a sulphuric acid solution to enhance its whiteness and brightness of color.—A.P.-C.

New Bleach and Chlorine Control Equipment. F. R. McCrumb. Paper Mill 54, No. 37: 5 (Sept. 12, 1931); Pulp Paper Mag. Can. 30: 1077 (Sept. 24, 1931).—A brief description of the construction and method of using the chlorine slide colorimeter, which permits of the simple and rapid colorimetric determination of chlorine in bleach liquor or in water (sterilization of water, sewage, wastes, etc., or the control of slime in paper-making and other equipment).—A.P.-C.

Sizing

Process for the Sizing of Paper by Treatment with Rosin Emulsion under the Addition of Alkali Bisulphate and Aluminum Sulphate. Ernst Lecocq, Stree Marchin, Belgium. Aust. pat. 122,015 (Nov. 15, 1930).—The aluminum sulphate is added to the fiberous materials in the beater after the alkali bisulphite, whereby the latter has as its object, the supplying of a part of the necessary aluminum sulphate.—J.F.O.

Determination of Sizing Ability and Efficiency of Beater Sizing Agents. A. C. Dreshfield, G. R. Haggerson and H. F. Heller. Paper Trade J. 93, No. 14: 36-38 (Oct. 1, 1931).—A detailed description is given of the development of a test for determining the suitability of sizing agents, under conditions approaching as nearly as practical mill operating conditions. The method consists essentially in beating the stock in a laboratory beater, sizing, making hand sheets, drying and comparing the sizing of the sheets with those sized with a standard size. The various operations of the test have been standardized, and the reasons for the adoption of the conditions of each step are explained.—A.P.-C.

Sulphate of Alumina and the Alums. J. J. Healy, Jr. Paper Trade J. 93, No. 14: 38-40 (Oct. 1, 1931).—A brief description of their sources and method of manufacture.—A.P.-C.

Fillers

Sizing Filled Paper. Harold R. Rafton assignor to Raffold Process Corp. U. S. pats. 1,810,728 and 1,810,729 (June 16, 1931). —No. 1,810,728—A metallic salt such as alum is added to a mix comprising fibrous material and a filler so as to permit only a brief time of contact of the materials before the paper is formed. No. 1,810,729 relates to a process in which a filler is added to a fibrous mix containing a metallic salt such as alum for similar brief time of contact before making the paper—A.P.-C.

Paper with Alkaline Filler. Harold R. Rafton assignor to Raffold Process Corp. U. S. pat. 1,813,362 (July 7, 1931).—A flotation agent bearing material, such as casein-bearing broke, is added to a fibrous mix under conditions favoring the minimizing of the contact of the material with the other constituents of the mix and paper is made from the mix.—A.P.-C.

Effect of Relatively High Sulphur Dioxide Concentration in Sulphite Pulping*

By G. H. Chidester[1] and J. N. McGovern[2]

Under pressures within the commercial range, the use of concentrations of sulphur dioxide higher than those normally employed in commercial sulphite pulping practice showed a greater retention of sulphur dioxide in the early stages of the digestion and consequently a slightly greater pulping effect. This effect, although not large, was progressively greater, as the initial concentration was increased, up to about 5.5 per cent excess (between 8 and 9 per cent "total") sulphur dioxide, above which the effect produced was less proportionate to the increase in sulphur dioxide concentration.

Introduction

The purpose of the experimentation described in this report was to obtain some indication of any advantages or disadvantages, other than mechanical effects, that might be expected from acid containing more "free" sulphur dioxide than the percentage that is normal in commercial practice under pressures within the commercial range. This percentage is somewhat small, even though in the "quick-cook" process the use of an acid containing much less than 4 per cent total sulphur dioxide is not common practice; with such a total the "combined" sulphur dioxide content ranges from 1.10 to 1.35 per cent. For reasons of sulphur economy or the limitations of acid plant operation, the high limit is usually between 6 and 7 per cent total sulphur dioxide, with the same range of the "combined" content. In the present experiments the total sulphur dioxide content of the cooking acid varied from 5.5 to 20 per cent.

Earlier work by Miller and Swanson, like this work carried out in the Forest Products Laboratory, has shown that the temperature and the concentration of excess sulphur dioxide above that required for the bisulphite are most important factors in the digestion of wood by the sulphite process. Increasing either the temperature or the sulphur dioxide concentration or both has the same general effect; the rate of pulping is increased and more hydrolysis of the cellulose occurs, resulting in a lower yield of pulp. The effect of sulphur dioxide concentration, in particular, has been shown by means of bomb-scale studies; the cooking proceeds at a much greater rate in a sealed bomb, from which there is no gas relief, than it does when sulphur dioxide is relieved, as in a normal digestion. In normal commercial practice, the temperature and the pressure existing in the digester tend to establish the amount of excess sulphur dioxide and, since operating pressures are usually limited to approximately 75 pounds per square inch, temperature becomes the main factor in controlling the cooking operation. Under these conditions the principal advantages of an acid in the high range of "free" sulphur dioxide content are a better circulation of the liquor, which may produce a more uniform temperature in the digester by the evolution of the greater amount of gas, and possibly a better penetration of the chips.

A high sulphur dioxide concentration is advocated by R. B. Wolf in U. S. Patents 1,772,779; 1,780,638; and 1,699,556, which describe methods of recovery of the gas. Another patented process is that of Thorne (U. S. Patent 1,691,682), which also maintains a high free sulphur dioxide concentration.

Experimental Work

Using different temperature schedules, digestions were made with the maximum temperature ranging from 132 to 148 deg. C. The cooking acids contained, respectively, 5.5, 7.2, 10, and 20 per cent total sulphur dioxide and 1.2 and 0.7 per cent combined sulphur dioxide. The corresponding initial "excess sulphur dioxide" range was from 3.1 to 17.6 per cent. The effects of these different concentrations of acid were reflected in the differences in yield, strength, and bleach requirement of the resulting pulps (Table 1). The wood used was white spruce, obtained from northern Wisconsin.

The experiments were carried out in the semi-commercial equipment in the Forest Products Laboratory, which has been described in previous reports.[3] The methods of procedure and testing have also been previously described.[3] The high content of "free" sulphur dioxide was obtained by introducing the required amount of the gas directly into the digester containing acid of normal strength and the charge of chips.

Discussion of Results

As the concentration of excess sulphur dioxide in the acid was increased, the effect, in general, was to speed up the rate of cooking. This is shown by a comparison of the first three digestions recorded in Table 1 (Nos. 3434, 3440, and 3441), where the acid containing 20 per cent total sulphur dioxide displayed a greater pulping action than the one containing 10 per cent total, even though the time of digestion was reduced; the 10 per cent acid was more effective than the acid containing 5.5 per cent total sulphur dioxide, with the same time and temperature.

Further evidence of the greater pulping action of the stronger acid comes from a comparison of results obtained with a temperature schedule specifying 110 deg. C. in 1½ hours and then calling for a uniform rise to 140 deg. in 8½ hours (digestions 3443, 3447, and 3500). The yields of pulp ranged from 51.1 to 53.6 per cent and the bleach requirement from about 23 to more than 30 per cent; the amount of bleach required to give 84 parts of blue is customarily estimated from the amount actually used and the color obtained. The highest yield and bleach requirement came from the acid containing 5.5 per cent sulphur dioxide and the lowest yield and bleach values were obtained with the 10 per cent acid. The results from the acid containing 7.2 per cent total sulphur dioxide indicated only slightly less pulping effect than those obtained with the 10 per cent acid.

To get further indication of any greater pulping action of the higher sulphur dioxide content, another series of digestions (Nos. 3442, 3444, and 3472) was carried out, using a temperature schedule that called for 110 deg. C. in 1½ hours followed by a uniform temperature increase to 132 degrees in 8½ hours, a temperature limit considerably lower than that which would be required with an acid containing 5.5 per cent sulphur dioxide. The pulps produced were raw and contained more screenings than are desirable, but their unbeaten strength was unusually high. This quality was utilized in a newsprint furnish containing 75 per cent of

* To be presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 15-18, 1932. Written discussion of this paper should be sent to R. G. Macdonald, 370 Lexington Ave., New York, N. Y.
Contribution of the TAPPI acid pulping committee.

[1] Member TAPPI, associate engineer, Forest Products Laboratory, maintained at Madison, Wis., in cooperation with the University of Wisconsin.
[2] Junior member TAPPI, junior technologist, Forest Products Laboratory.

[3] Pulping eastern hemlock by sulphite process. Paper Trade J. 87, 20 (1928).

TABLE 1—DIGESTION CONDITIONS AND RESULTS IN SULPHITE PULPING WITH VARYING AMOUNTS OF SULPHUR DIOXIDE
Pebble mill strength tests

Digestion No.	Weight of chips oven-dry Lbs.	Acid composition: Acid added Gals.	Acid composition: Total SO_2 Per cent	Acid composition: Free SO_2 Per cent	Acid composition: Combined SO_2 Per cent	Acid composition: Excess SO_2 Per cent	Time of digestion Hrs.: Min.	Time to 110 deg. C. Hrs.: Min.	Maximum temperature deg. C.	Time to Maximum temperature Hrs.: Min.	Maximum pressure Lbs./sq. in.	Yield of pulp: Total Per cent	Yield of pulp: Screened Per cent	Yield of pulp: Screenings Per cent	Bleach used Per cent	Bursting strength Milling time—minutes: 20	40	60	80	Double folds Milling time—minutes: 20	40	60	80	Condition of pulp	Color of pulp: Red	Green	Blue
																	Pts./lb./ream				Double folds					Ives parts		
3434	75.0	55	20.00	18.81	1.19	17.62	7:15	1:30	141	7:15	75	50.8	49.2	1.6	0	0.71	0.93	1.11	1.20	121	919	1277	1453	Unbleached	66	90	85
															24									Bleached	86	90	85
3440	75.0	55	5.49	4.29	1.20	3.09	8:30	1:30	148	8:30	75	52.2	50.7	1.5	0	.97	1.13	1.19	1.24	300	857	1072	1437	Unbleached	55	64	57
															28									Bleached	86	87	82
3441	75.0	55	10.00	8.80	1.20	7.60	8:30	1:30	148	8:30	75	49.2	48.0	1.2	0	.66	.99	1.11	1.16	236	548	766	1915	Unbleached	73	63	58
															18									Bleached	90	88	83
3443	74.6	55	10.00	8.79	1.21	7.58	8:30	1:30	140	8:30	75	51.1	49.6	1.5	0	.90	1.20	1.24	1.27	614	1384	1155	1327	Unbleached	70	62	57
															25									Bleached	88	90	86
3447	75.0	55	5.52	4.32	1.20	3.12	8:30	1:30	140	8:30	75	53.6	52.3	1.3	0	.87	1.08	1.12	1.11	687	937	1231	1229	Unbleached	63	56	51
															30									Bleached	83	76	67
3500	75.0	55	7.20	5.98	1.22	4.76	8:30	1:30	140	8:30	75	52.6	50.8	1.8	0	.80	1.08	1.15	1.20	258	659	699	1233	Unbleached	76	70	66
															25									Bleached	88	88	84
3473	73.8	55	10.00	8.79	1.21	7.58	8:40	1:30	140	7:30	85	50.3	48.8	1.5	0	.59	.90	.99	1.03	28	372	479	588	Unbleached	77	66	61
															20									Bleached	85	83	83
3475	74.5	55	10.00	8.80	1.20	7.60	10:00	1:30	140	9:00	85	47.9	46.8	1.1	0	.46	.77	.85	.89	21	100	420	493	Unbleached	75	69	63
															20									Bleached	85	83	82
3450	74.9	55	10.00	8.80	1.20	7.60	9:30	1:30	136	9:30	75	52.3	50.8	1.5	0	.80	1.02	1.13	1.17	1210	1218	1295	1144	Unbleached	70	51	55
															28									Bleached	86	86	82
3442	72.4	55	20.00	18.79	1.21	17.58	8:30	1:30	132	8:30	75	56.0	53.5	2.5	0	.90	1.20	1.32	1.31	853	2206	1756	1711	Unbleached	73	63	54
															28									Bleached	84	75	63
3444	74.8	55	20.00	18.78	1.22	17.56	8:30	1:30	132	8:30	75	53.4	51.8	1.6	0	1.00	1.18	1.25	1.21	1227	1309	1276	1217	Unbleached	71	61	56
															30									Bleached	87	82	78
3472	75.0	55	10.00	8.80	1.20	7.60	8:30	1:30	132	8:30	75	55.1	50.5	4.6	0	.79	1.00	1.17	1.13	284	591	1018	765	Unbleached	67	55	50
															30									Bleached	82	78	71
3476	84.6	55	10.00	8.80	1.20	7.60	8:30	1:30	132	8:30	85	52.4	50.6	1.8	0	.91	1.12	1.21	1.16	352	1238	1257	1023	Unbleached	70	61	55
															30									Bleached	85	84	82
3477	74.2	55	10.00	9.30	.70	8.60	8:30	1:30	132	8:30	85	52.4	50.0	2.4	0	.57	.82	.99	.98	38	236	640	1160	Unbleached	68	60	54
															20									Bleached	86	84	83
3479	74.3	55	5.53	4.81	.72	4.09	8:30	1:30	132	8:30	85	54.7	52.0	2.7	0	.79	.98	1.19	1.13	113	575	641	608	Unbleached	66	56	52
															30									Bleached	83	80	76

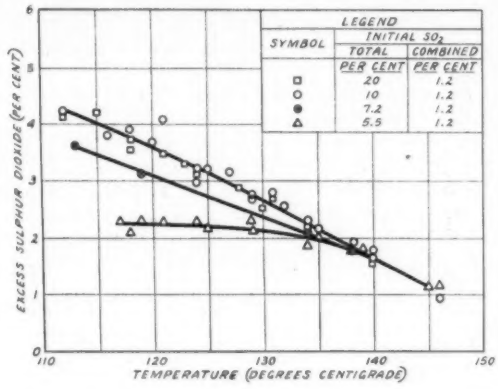


FIG. 1
Excess sulphur dioxide content at different temperatures for a pressure of 75 pounds per square inch.

fine aspen groundwood; a paper of satisfactory newsprint quality resulted. Because of the rapid increase in pressure early in the digestion, difficulty was experienced in duplicating the conditions exactly and close checks were not obtained in the results. Considering this fact, the differences in the effects produced by acid containing respectively 10 and 20 per cent sulphur dioxide appear small. The pulps produced were quite similar to one (No. 3447) obtained with 5.5 per cent acid on a temperature schedule specifying 140 deg. C. in the same time. A high yield of strong pulp was obtained in digestion 3450 with a 10 per cent acid on a temperature schedule that called for 136 deg. C. in 9½ hours.

The effect of increasing the digester pressure to 85 pounds per square inch is shown by digestions 3473, 2475, 3476, 3477, and 3479. In No. 3476, for example, the yield and bleach requirement were lower than the values obtained with acid containing 10 per cent sulphur dioxide under 75 pounds pressure and an identical temperature schedule, in No. 3472.

The effect of a low "combined" sulphur dioxide content is indicated in digestions 3477 and 3479. The greater amount of excess and the smaller amount of combined sulphur dioxide increased the pulping action considerably, reduced the bleach requirement approximately 10 per cent, and also lowered the bursting strength of the pulp. The digestion with 5.5 per cent acid (No. 3479) gave a pulp similar to that obtained with acid containing 10 per cent total and 1.2 per cent combined sulphur dioxide (No. 3477) under 75 pounds pressure, with the same temperature schedule. The high screenings, however, check previous experience, which has shown the minimum "combined" sulphur dioxide requirement to be about 0.9 per cent.

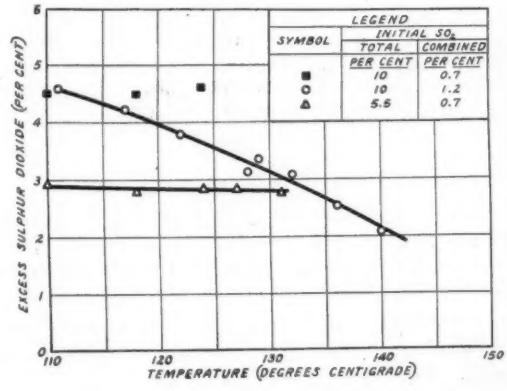


FIG. 2
Excess sulphur dioxide content at different temperatures for a pressure of 85 pounds per square inch.

Fig. 1 shows the amounts of excess sulphur dioxide retained in the digester at different temperatures, for the different initial concentrations of acid, during the progress of the digestions made under a pressure of 75 pounds per square inch. Fig. 2 shows the corresponding values for the digestions at 85 pounds. In Fig. 1 the values from digestions using 10 and 20 per cent total sulphur dioxide are approximately the same, while those in which a 7.2 per cent acid was used are only slightly lower. The values obtained from the digestions with 5.5 per cent total sulphur dioxide are approximately constant at 2.3 per cent up to a temperature of 135 degrees where they begin to follow those of the digestions with higher initial acid concentrations, declining with them.

The effect of increasing the pressure to 85 pounds per square inch may be seen in a comparison of the values plotted in the two figures for the digestions with 10 per cent total and 1.20 per cent "combined" sulphur dioxide. About 0.3 per cent more sulphur dioxide was retained under 85 pounds pressure. In Fig. 2 a slightly greater retention of sulphur dioxide is indicated for the same total but a lower initial "combined" sulphur dioxide content.

Neglecting any possible effect on the penetration of the chips, the effects of different initial concentrations of excess sulphur dioxide upon the progress of the digestion must be due to the amounts retained in the digester at the lower temperatures. The difference between the amounts of the sulphur dioxide actually retained must be accounted for by the presence of other gases, principally air and carbon dioxide. Analysis of the relief gases early in one digestion with acid containing 5.5 per cent total sulphur dioxide showed a carbon dioxide content of approximately 20 per cent. Hence it seems logical that the greater amounts of excess sulphur dioxide are retained from the higher initial concentrations by displacement of the more inert gases.

Conclusions

As indicated by the foregoing, the amount of excess sulphur dioxide retained during the early stages of the digestions, above 110 deg. C. and up to 135 deg. C., under a pressure of 75 pounds per square inch, increased as the initial concentration increased, up to a limit of about 5.5 per cent "excess" sulphur dioxide. When the initial concentration was higher than 5.5 per cent little difference was shown in the amount retained. The retention of greater amounts of sulphur dioxide during the early stages of the digestion when the initial concentration is higher may be explained by its displacement of inert gases, principally carbon dioxide. Increasing the pressure to 85 pounds per square inch slightly increased the retention of sulphur dioxide. The principal effect of the retention of greater amounts of sulphur dioxide is a slight reduction of either the cooking time or temperature. Decreasing the combined sulphur dioxide to 0.7 per cent increased the rate of cooking, and also the screenings.

Although there appears to be a distinct increase in pulping action with increase in initial sulphur dioxide content under normal cooking pressures the difference is relatively small, and the results obtained with more than 5.5 per cent excess sulphur dioxide are even less commensurate with the increase in acid concentration than those below that value.

Water Resistance Of Papers*

By Philip W. Codwise[1]

One of the recent projects of the paper testing committee has been an investigation of the testing of water resistance of papers with the object of developing a standard association method for the determination of this property. The purpose of this article is to present such a method together with supporting data that has resulted from the cooperative work by the members of this sub-committee. It is felt that a generally acceptable method of determining the over-all "size resistance" of paper is one of the major needs at the present time and, therefore, this report is being presented without delay.

The committee work naturally divided itself into several parts and this report presents our conclusions on the first section of the work, namely, the determination of water penetration through papers of ordinary thickness and not over .009 inch thick. The other sections of the work will be concerned with the determination of water resistance of paper boards, or in general sheets over .009 inch in thickness, and with the resistances of paper surfaces to the absorption of water. It should be noted that the present report and method does not furnish definite data regarding this latter feature and that where such characteristics are of major importance, as in testing the writing qualities of fine papers, additional tests should be performed for surface resistance to water spreading.

Total Size Resistance

The major problem, however, has been to establish the method for total size resistance and this is being done herewith. For the heavier sheets of board additional methods will be desirable and after the present work has been brought to a definite conclusion, we hope to present such supplementary methods for consideration.

As outlined in previous committee reports, the dry indicator method has developed to be most suitable for the purpose in view and, therefore, recent committee work has been concentrated upon refinement of the details of this method, combined with cooperative testing in order to determine its accuracy in the hands of different operators and in various sections of the country.

Previous Report

Our report presented at the 1931 annual meeting covered an investigation of the operation of the test and gave the detailed method as submitted to the cooperating laboratories to be followed in reporting their results. This is the method we are recommending for general use and we will, therefore, give it in abridged form in order to make this report complete in itself. Naturally, in the course of this work various suggestions for changes in the details have been proposed and these will be given consideration later in this report as a possible basis for further refinement of the method. It is our belief that these suggestions have no direct bearing upon the fundamentals of the test nor would they be expected to appreciably affect the relations of the results given herewith.

The dry indicator method proposed as the association standard for water resistance in condensed form is as follows:

Dry Indicator Method

Prepare the indicator by pulverizing a quantity of tablet sugar, until it passes a 100 mesh sieve and place this in a dessicator. Prepare similarly soluble starch and methyl violet dye. When thoroughly dry weigh out the following: 45 grams sugar, 5 grams starch and 1 gram methyl violet. Mix these ingredients thoroughly by repeated sifting after which the indicator is ready for use; it should be kept tightly sealed when not in use. The test specimen is cut to size 2¾ inches by 2¾ inches and a thin

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Contribution of the TAPPI paper testing committee.

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uniform sprinkling of the indicator is dusted upon the top of the sample by means of a suitable shaker. The specimen is then exposed to the action of water at exactly 70 deg. F. upon its under side and the elapsed time in seconds for the indicator to discolor on the upper side of specimen is determined. This is done by supporting the paper on a glass cylinder 1⅝ inches in diameter, submerged under the water with its upper ground edge just below the surface. The upper surface of the specimen should be covered during the test and this may be done by placing a 100 cc. beaker, right side up above it. In obtaining the results, two readings are taken, one when 25 per cent of the area has discolored and one when 75 per cent has changed. The reported result is the average of the two readings. Tests should be carried out independently from both sides of the sheet and the sizing test of the paper shall be the average of ten tests, five taken from each side. Before commencing independent work upon this test, reference should be had to the original articles[2,3] dealing with various details of the procedure and discussing the different precautions necessary for the successful prosecution of this work such as careful control of the water temperature, the preparing of the indicator according to standard directions, the careful dusting on of the indicator in not more than a thin sprinkling, the protection of the upper surface of sample with the cover glass and the use of the double end-point.

Cooperative Tests

In addition to sending to the cooperating laboratories detailed directions for conducting the tests, instructions were also given to season and test the samples under the standard atmospheric conditions of 65 per cent relative humidity and of 70 deg. F. temperature. Temperature readings on the testing water also were taken at frequent intervals keeping the temperature within two degrees of the standard temperature of 70 deg. F. in all cases. In one case the specimens were exposed for several days to conditions of 80 per cent relative humidity and 70 deg. F.; these results were appreciably lower and, therefore, have not been included in our calculations. It might also be noted that tests have been conducted upon samples dessicated over calcium chloride for 24 hours and that these results are appreciably higher than those upon samples seasoned under standard conditions.

The cooperative testing of this method as covered by the present report consists of work upon two different sets of four papers each. In preparing these samples every precaution was taken to assure uniformity and the test specimens were cut to size and a set representing the same sheets of paper was sent to each operator. The samples were also marked to indicate the wire and felt sides in order that there should be uniformity of results in this connection. We are now giving the details of the eight different papers employed in this work:

Sample I is a Southern pine sulphate wrapping, beater sized with 2 per cent dry rosin size and 2½ per cent alum; no fillers were used in the furnish. It has a high dry finish. The weight of the sheet is 54.0 pounds upon basis 24″ × 36″—480.

Sample II is a coated lithograph paper composed of sulphite pulp and mixed paper stock, with 10 per cent clay in beaters. It is beater sized with 2½ per cent dry rosin size and 4 per cent of alum. The coating solution used in processing upon one side was waterproofed to resist the action of water. The coated sheet was calender finished in the usual way. The weight is 100 pounds upon basis 25″ × 38″—500.

Sample III is a sulphite ledger, beater sized with rosin and alum. The sheet has a smooth high finish and weighs 32 pounds on 17″ × 22″—500 basis.

Sample IV is a tub sized bond composed of rag and bleached sulphite. The stock was beater sized with alum and rosin size and the dried sheet tub sized and loft dried. The sheet has a high finish and weighs 20 pounds on basis 17″ × 22″—500.

Sample V is a Can Liner sheet made from bleached sulphite. It is beater sized with 1 per cent dry rosin size and 1½ per cent alum. No fillers were used in the furnish. The sheet has a high machine water finished surface and weighs 80 pounds on basis 24″ × 36″—480.

Sample VI is a Southern pine sulphate bag stock, beater sized with 2 per cent dry rosin size and 2½ per cent alum. No fillers were used in the furnish and the sheet has a low dry finish. The weight is 36 pounds upon basis 24″ × 36″ — 480.

Sample VII is a beater sized sulphite bond with moderate machine finish. The weight of the sheet is 16 pounds on basis 17″ × 22″—500.

Sample VIII is a tub sized ledger composed of rag and bleached sulphite. The stock was beater sized with rosin size and alum and the dried sheet tub sized and subsequently loft dried. This sheet was unfinished and weighs 28 pounds on 17″ × 22″ — 500 basis.

In order to give a clear picture of the relative weights of the sheets we have calculated them all to a basis of one thousand square feet. Also after tabulating their thickness, we have calculated the densities in pounds per cubic foot. These properties are given in the following table and they are of use in judging the relative degree of sizing of the different stocks used in the respective papers.

Sample	Kind	Thickness	Weight per M sq. ft.	Density lbs. per cu. ft.
I	Wrapper	.0045″	18.75 lbs.	50.0
II	Coated Litho	.0056	30.30	65.0
III	Beater Sized Ledger	.0048	24.60	61.6
IV	Tub Sized Bond	.0040	15.40	46.2
V	Can Liner	.0062	27.77	53.7
VI	Bag Stock	.0043	12.50	35.0
VII	Beater Sized Bond	.0030	12.30	49.3
VIII	Tub Sized Ledger	.0057	21.56	45.4

The results given below from seven widely separated laboratories were furnished upon a standardized report form. Before giving representative detailed results we will give a condensation of the reports in which the final results are compared and discussed from a precision standpoint. After this, detailed figures on representative samples will be presented and also discussed. The compilation of the sizing test results that are now given will indicate the accuracy to be expected from the method as outlined in considerable detail in our report at the 1931 annual meeting and included above in condensed form. The following figures in each case represent ten determinations, five taken from each side of the sheet. In sending out the samples, the precaution was taken to send out samples of indicator powder with the first set, that is samples I to IV inclusive, but for the second set, samples V to VIII instructions were issued to each laboratory to prepare their own indicator. It is gratifying to note that there is even closer agreement in the second set than in the first, indicating the directions for the preparation of the indicator are adequate and that increased accuracy can be expected from the method upon increased familiarity with it. The condensed results are as follows:

FIRST GROUP OF PAPERS

Operator	Sample I	Sample II	Sample III	Sample IV
	Test Results Average of Ten Tests			
A	39.9 sec.	89.2 sec.	147.9 sec.	46.0 sec.
B	35.5	82.5	140.0	39.5
C	53.5	101.0	176.0	50.0
D	44.1	96.8	170.0	50.8
E	32.9	80.1	135.7	37.5
F	38.4	75.5	138.8	43.0
G	44.1	78.8	153.4	41.4
Mean Result	41.2	86.3	151.7	44.0
	Precision Analysis Diviation from Mean			
A	1.3 sec.	2.9 sec.	3.8 sec.	2.0 sec.
B	5.7	3.8	11.7	4.5
C	12.3	14.7	24.3	6.0
D	2.9	10.5	18.3	6.8
E	8.3	6.2	16.0	6.5
F	2.8	10.8	12.9	1.0
G	2.9	7.5	1.7	2.6
Maximum Deviation	12.3 sec.	14.7 sec.	24.3 sec.	6.8 sec.
Minimum Deviation	1.3 sec.	3.8 sec.	1.7 sec.	1.0 sec.
Average Deviation	5.2 sec.	8.1 sec.	12.7 sec.	4.2 sec.
Maximum % Deviation	30.0%	17.1%	16.0%	15.5%
Minimum % Deviation	3.2%	4.4%	1.1%	2.3%
Average % Deviation	12.5%	9.4%	8.4%	9.6%

Samples I to IV: Combined Average Percent Deviation = 9.9%

SECOND GROUP OF PAPERS

Laboratory	Sample V	Sample VI	Sample VII	Sample VIII
Test Results Average of Ten Tests				
A	134.9 sec.	21.3 sec.	32.1 sec.	63.5 sec.
B	128.0	19.5	29.5	55.5
C	137.5	18.6	28.3	58.0
D	131.5	19.9	30.0	61.0
E	111.1	17.3	24.5	48.5
F	127.5	20.5	29.5	58.5
G	146.6	26.1	38.6	71.7
Mean Result	131.0	20.5	30.4	59.5
Precision Analysis Deviation from Mean				
A	3.9 sec.	0.8 sec.	1.7 sec.	4.0 sec.
B	3.0	1.0	0.9	4.0
C	6.5	1.9	2.1	1.5
D	0.5	0.6	0.4	1.5
E	19.9	3.2	5.9	11.0
F	3.5	0.0	0.9	1.0
G	15.6	5.6	8.2	12.2
Maximum Deviation	19.9 sec.	5.6 sec.	8.2 sec.	12.2 sec.
Minimum Deviation	0.5 sec.	0.0 sec.	0.4 sec.	1.0 sec.
Average Deviation	7.6 sec.	1.9 sec.	2.9 sec.	5.0 sec.
Maximum % Deviation	15.2%	27.3%	27.0%	20.5%
Minimum % Deviation	0.4%	0.0%	1.3%	1.7%
Average % Deviation	5.8%	9.2%	9.4%	8.5%

Samples V to VIII: Combined Average Deviation = 8.2%.
Grand Average Deviation for the eight samples = 9.1%.

Sizing Factors

In a consideration of the above figures certain fundamental features in connection with the sizing qualities of paper must be borne in mind. The first is that the sizing characteristic of any sheet of paper can not in the strictest sense of the word be considered as a constant quantity. In general, the sizing characteristics of paper can be markedly altered by various exposure conditions and in certain cases such changes in sizing may be permanent in nature. The magnitude of such changes are oftentimes greater than would normally be expected by the uninitiated and the external conditions causing such changes are not necessarily extreme or abnormal; in fact such conditions are often met with in the ordinary handling of paper and paper products. The second is the human equation which is an important factor in the tests of sizing of paper and this often causes variations in results even when the greatest care is taken to control conditions. In view of these facts we believe that the above condensed results may be considered as satisfactory checks upon the dry indicator method and that they warrant the adoption of it as a tentative standard.

The question now arises as to what degree of accuracy can be expected from this method on the basis of the above figures and for this purpose we have calculated the average deviation, or the numerical measure of the amount by which a new observer working under the same conditions as the others is likely to differ from the mean value, and we find that in the case of seven out of the eight papers this is below ten per cent and that for the eight papers combined it amounts to 9.1 per cent. Therefore, it is seen that the average deviation of results of the Dry Indicator test is slightly below ten per cent and that results obtained by this method may be normally expected to be within ten per cent of the correct sizing result when the tests are conducted according to the standard published directions and when the result considered is the average of ten tests, five taken from each side of the sheet. In order to make the report as complete as possible, we have presented the deviation from the mean of each result and have calculated the maximum deviation percentages which varies from 15.5 to 30.0 per cent on the different samples, indicating that certain operators upon certain samples will produce results considerably more than 10 per cent at variance from the true ones; and also the minimum deviation percentage, which vary from zero up to 4.4 per cent, indicating that on the other hand certain operators can obtain results of much greater accuracy than the normal 10 per cent figure.

Detailed Results

For the purpose of rendering this report as complete as possible, we will now give the detailed results upon two of the eight papers examined. In general it may be stated that individual operators can check their own results quite closely. Although this is not always the case, yet it is a general tendency that has been noted throughout the committee work and the chief difficulty has been to obtain a satisfactory agreement among the different and widely separated laboratories. In other words, the errors in this work appear to be more largely those of the personal equation, variations in individual procedure, and variations in local conditions.

As representative of the usual agreement among the individual results of the different operators, we are giving the detailed figures upon Sample VIII. We are also giving these figures for Sample II which was the only one showing a marked difference from the two sides of the sheet, and which also shows the greatest variations in the results of the individual operators. In the following table, the two readings taken in each test, one when 25 per cent of the area is changed in color and the other when 75 per cent of the area has changed, have been averaged and the resulting figure is used. The results upon Sample II, illustrating the greatest individual variations, are first given followed by those of Sample VIII, representative of the usual agreement.

SAMPLE II (COATED LITHOGRAPH PAPER)

Wire side down	Operator A	B	C	D	E	F	G
(1)	83.8 sec.	99.0 sec.	108.0 sec.	115.0 sec.	88.5 sec.	88.0 sec.	92.5 sec.
(2)	125.7	83.0	145.0	120.0	89.0	82.5	101.0
(3)	93.4	86.0	118.0	110.0	91.0	87.0	87.0
(4)	89.8	86.0	120.0	137.5	92.0	89.0	97.5
(5)	87.6	83.0	115.0	137.5	89.0	97.5	98.0
mean	96.1	87.4	121.0	124.0	89.9	88.8	95.2
Average deviation	11.9 sec.	4.8 sec.	9.4 sec.	10.8 sec.	1.3 sec.	3.6 sec.	4.4 sec.
Average % deviation	12.4%	5.5%	7.8%	8.7%	1.4%	4.0%	4.6%
Felt side down							
(1)	69.7 sec.	83.0 sec.	83.0 sec.	65.0 sec.	80.5 sec.	58.5 sec.	62.5 sec.
(2)	73.2	67.0	75.0	82.5	58.0	58.0	62.0
(3)	90.7	84.0	80.0	65.0	74.5	63.0	61.5
(4)	87.8	88.0	80.0	65.0	84.0	66.0	62.5
(5)	90.1	69.0	78.0	70.0	54.0	65.5	63.0
mean	82.3	78.0	80.0	69.5	70.2	62.2	62.3
Average deviation	8.7 sec.	8.2 sec.	2.0 sec.	5.4 sec.	11.4 sec.	3.2 sec.	0.4 sec.
Average % deviation	10.5%	10.5%	2.5%	7.8%	16.2%	5.1%	0.7%

SAMPLE VIII (TUB SIZED LEDGER)

Wire side down	Operator A	B	C	D	E	F	G
(1)	53.3 sec.	54.0 sec.	59.5 sec.	62.5 sec.	47.0 sec.	60.0 sec.	75.5 sec.
(2)	63.6	54.5	59.0	56.5	50.0	56.0	75.5
(3)	64.2	54.5	52.5	60.0	50.0	60.0	74.0
(4)	67.9	59.0	56.0	57.5	51.0	58.0	67.0
(5)	62.5	56.5	57.5	58.5	45.0	56.0	70.5
mean	62.3	55.9	57.0	59.0	48.6	58.0	72.5
Average deviation	3.6 sec.	1.8 sec.	2.1 sec.	1.8 sec.	2.1 sec.	1.6 sec.	3.0 sec.
Average % deviation	5.8%	3.2%	3.7%	3.1%	4.3%	2.8%	4.1%
Felt side down							
(1)	64.7 sec.	56.0 sec.	57.5 sec.	64.0 sec.	49.5 sec.	58.0 sec.	72.5 sec.
(2)	64.6	55.0	61.0	60.5	46.5	59.0	68.5
(3)	62.7	53.0	58.0	64.0	51.5	59.0	69.5
(4)	64.4	54.0	59.5	61.0	48.0	60.0	72.5
(5)	67.1	58.0	60.0	65.0	46.0	59.0	71.5
mean	64.7	55.0	59.0	62.9	48.3	59.0	70.9
Average deviation	1.0 sec.	1.4 sec.	1.2 sec.	1.7 sec.	1.8 sec.	0.4 sec.	1.5 sec.
Average % deviation	1.5%	2.6%	2.0%	2.7%	3.6%	0.7%	2.2%

The elapsed time between the 25 and the 75 per cent readings varies to a certain extent with different papers but is more nearly constant than might be expected. For example, on the softest sized paper examined in this investigation Sample VI this averaged 4.5 seconds while upon the hardest sized sheet, Sample III it averaged 14.5 seconds. In order to make this committee report as complete as possible, we are giving the 25 and 75 per cent through figures for Sample VIII the average of which results are given in the table directly above.

Operator

	A		B		C		D		E	
Wire side down	25%	75%	25%	75%	25%	75%	25%	75%	25%	75%
(1)	45.0	61.6	51.0	57.0	57.0	62.0	60.0	65.0	44.0	50.0
(2)	60.0	67.2	51.0	58.0	56.0	62.0	53.0	60.0	47.0	53.0
(3)	59.6	68.8	51.0	58.0	50.0	55.0	55.0	65.0	47.0	53.0
(4)	61.2	74.6	55.0	63.0	53.0	59.0	55.0	60.0	48.0	54.0
(5)	57.2	67.8	55.0	58.0	54.0	61.0	55.0	62.0	43.0	47.0
mean	56.6	68.0	52.6	58.8	54.0	59.8	55.6	62.4	45.8	51.4

	F		G	
Wire side down	25%	75%	25%	75%
(1)	51.0	69.0	72.0	79.0
(2)	52.0	59.0	73.0	78.0
(3)	57.0	63.0	71.0	77.0
(4)	53.0	63.0	64.0	70.0
(5)	52.0	60.0	68.0	73.0
mean	53.2	62.4	69.6	75.4 sec.

	A		B		C		D		E	
Felt side down	25%	75%	25%	75%	25%	75%	25%	75%	25%	75%
(1)	60.2	69.2	53.0	59.0	55.0	60.0	60.0	68.0	47.0	52.0
(2)	59.2	70.0	52.0	58.0	58.0	64.0	55.0	66.0	44.0	49.0
(3)	58.2	67.2	50.0	56.0	55.0	61.0	60.0	68.0	49.0	54.0
(4)	59.2	69.6	50.0	58.0	57.0	62.0	57.0	65.0	46.0	50.0
(5)	60.2	74.0	55.0	61.0	57.0	63.0	60.0	70.0	44.0	48.0
mean	59.4	70.0	52.0	58.4	56.4	62.0	58.4	67.4	46.0	50.6

	F		G	
Felt side down				
(1)	54.0	62.0	69.0	76.0
(2)	56.0	62.0	66.0	71.0
(3)	53.0	65.0	67.0	72.0
(4)	53.0	67.0	70.0	75.0
(5)	54.0	64.0	69.0	74.0
mean	54.0	64.0	68.2	73.6 sec.

Suggested Test Procedure Improvements

During the course of this investigation various suggestions have been made with the object in view of improving the details of the test procedure. Many of these are of interest and it may be advisable to eventually incorporate some of them in the test method. Obviously it was impossible to depart from the plan as laid down and incorporate the suggestions here as these would change the basis of the reports. However, one of the vital objects of the work is to develop the best possible test-method and, therefore, we will go into considerable detail regarding the suggestions offered. These do not, we believe, alter the method in any of its essentials but they do form a basis for further refinements at such time as the method may be advanced to a standard status.

The most important suggestion, which has been offered by Mr. F. T. Carson, the originator of the dry indicator method, has to do with a mechanical method of operating the test and would seem to have considerable value. The contrivance consists of a float for holding the sample and cover glass for protecting its upper surface. The float is made from a shallow light sheet aluminum dish and arranged with cork floats near the circumference to give it suitable buoyancy and to adjust the correct contact of the sample with the water; a spring is arranged across the top to hold a watch glass in contact with the float and protect the surface. The general operation of the test is the same as described above and consists of preparing the sample, placing it in position on top of the float with the watch glass protecting its upper surface and then proceeding as usual, timing the test from the moment of placing the float in contact with the water. The arrangement of this apparatus allows for a larger air space above the sample than does the detailed method recommended herewith and it is possible that this variation may produce slightly different results. It has been suggested in this connection that the relation of the air space above the indicator to the test result would offer an interesting point for additional investigation.

Another laboratory has offered the following suggestion in connection with the protection of the upper surface of the sample that will be of interest. "We have taken the crystal and crystal case of an old watch and are using it to replace the 100 cc. beaker which was advocated in your standard method. This device has all the advantages of protection of the sample of the beaker and makes far easier observation of the change in dye."

The double end-point which is almost a necessity in order to obtain the required accuracy in results introduces certain difficulties in manipulation. The use of two stop watches was included at the request of one of the committee members. Another suggestion is to use a double end-point stop watch having two timing hands. Still another variation in the procedure, preferred by one of the laboratories, is to start the second watch at the instant of stopping the first one rather than at the start. These, of course, are minor variations in procedure that should not affect the results.

Conclusions

Your committee believes that the work upon its investigation of water resistance is sufficiently advanced to recommend the Dry Indicator Test to the association as its standard method for water resistance of papers. The data in this report, is we believe, sufficient to show that the method produces reproducible results upon papers of ordinary thicknesses. We have not investigated the test of size resistance of paper board as yet and advise that on the basis of the work to date, the use of the method be confined to papers not over .009 inch in thickness. It should be borne in mind that this water resistance test gives the over-all size resistance and that in such cases where surface size resistance is of vital important supplementary tests should be applied.

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Materials of Construction Committee Report *

J. D. Miller,[1] Chairman

During the past year the committee has continued the activities outlined in the preceding report. Considerable work has been done in the metals field, although the program in the non-metallic field has not progressed as satisfactorily as desired.

Metal Sample Testing

Metal sample testing in the sulphite corrosion chamber has included samples of chromium-nickel castings, heat-treated and non-heat-treated; welded 18-8 Cr.-Ni. sheets of high and low carbon content, heat-treated and non-heat treated, and an excellent set of 8 samples of Cr.-Ni. of various analyses. The effect of heat-treating before and after machining will be investigated in a series of five 18-8 castings. The metallurgical phases of this work have been carried on by F. L. LaQue of the committee, who is also investigating several cases of failure of 18-8 castings submitted to the committee.

A Short Survey

The committee prepared a short survey of the materials of the sulphite, sulphate and neutral pulping processes. This is a part of the program of the committee sectional meeting.

A continuation of these activities is proposed for the coming year, with the necessary extensions as required to increase the effectiveness of the committee work.

Cooperation on the part of the committee members has been of a high order, giving assurance of continued progress in the work of the coming year.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 15-18, 1932.
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Handling and Drying of Single Coated Paper*

By H. G. Rappolt[1]

Coated paper has for many years been dried on a mechanical looping device known as a festoon rack, and at the present time this method is still almost universal in its use. The festoon rack permits the maximum amount of paper to be hung up in a given space, thus giving the greatest operating speed for the required drying time. Fig. 1.

The mechanical handling of the sheet and the drying have gone along hand in hand through a period of development, each taking turns being in the lead.

The earliest lines were built for narrow width sheets, and had

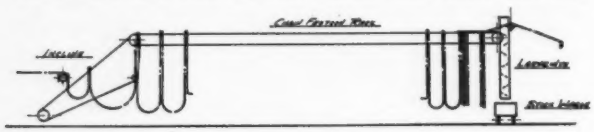


FIG. 1

to be very long, even though the speed was low, because of the slow drying. Steam coils were placed under the loops and the only air circulation was due to the convection currents set up by the coils. In this method the heat was applied to the uncoated side instead of to the coated side. The air currents had to pass over the edges to rise, and this overdried the edges. The only way the water vapor could escape was by the slow diffusion through the stagnant pockets on the top side, or rather the inside of the loops. The result was a slow, inefficient and uneven drying. To try and speed up the drying, higher steam pressures were used, which only aggravated the unevenness of drying and increased the radiation loss from the room.

During the period when pipe coil drying was in vogue, a novel design of festoon, known as the Staib rack, was created which had a series of mechanical pushing arms above the loops, moving the sticks ahead with a jerky movement. This caused the loops to wave and to produce a slight air movement by its bellows-like effect. These racks have not been used to any great extent in the coated paper field, but were very popular in the sand paper indus-

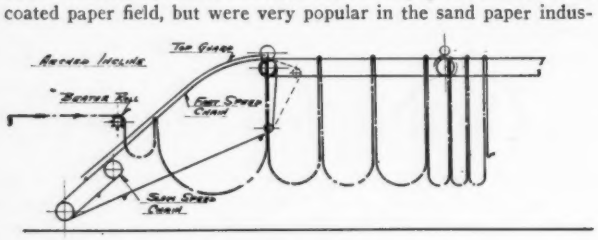


FIG. 3
Arched Incline for High Speed Rack

try, and some may still be seen in these mills in spite of the obsoleteness of its purpose. Fig. 2.

Drying Advances

The drying took a big step ahead when the steam coils were abandoned and the heat was supplied by air which was circulated from above the loops. A line of slotted duct was placed over the entire rack, the slots being located at the center line of the sheet. In this way the heat was applied directly to the coated side, and the center of the sheet was favored to eliminate the dry edges. The vapor was quickly removed by the wiping action of the circulated air, and the heat was supplied more quickly to the wet sheet.

Introducing the heated air from the top agrees with the natural circulating effect of the air. Although the air becomes

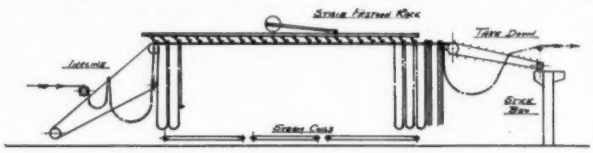


FIG. 2

lighter on picking up moisture, the temperature is dropped, which increases the density more than the moisture decreases it, thus causing a natural downward flow toward the floor line where the moisture-laden air is exhausted.

With this improved drying, the new lines were made shorter, with increased speed, and the speeds of the lines then in use were increased to the mechanical limits of the coating and festoon equipment.

Mechanical Improvements

Coating machines were built wider and wider, and much sturdier, to take care of increased speeds. The festoon rack was improved at the incline and the take-down ends, these parts being the chief obstacles in the path of higher speeds. The incline was arched, and top guides placed over the arch, to eliminate the tendency of the sticks to fly. A second, short chain was added to the incline to prevent the jumping of the sticks at high speeds as the stick is first picked up by the knockers. This second chain, travelling at about one half of the speed of the main chain picks up the stick more gently, and the high speed chain then lifts the

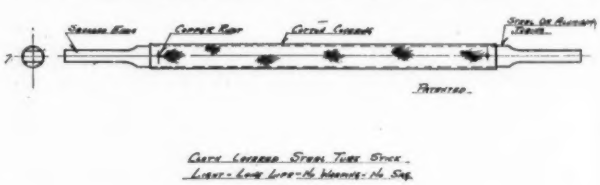


FIG. 4

stick from the short one, to carry it over the arch. This arrangement can also be used to feed two sticks at a time for heavy weight papers and boards which cannot be bent sharply without causing cracks or fractures on the top side of the sheet where it bends over. Fig. 3.

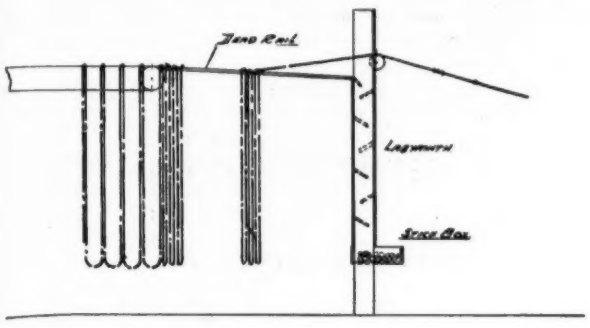
Metal sticks, with a cloth covering have taken the place of wooden sticks on the new wide lines. These are stronger, more rigid and will not warp from the moisture to which it is subjected. A warped stick will cause wrinkles near the center of the sheet which are practically impossible to take out. Fig. 4.

The earlier type of take down consisted of a dead rail placed beyond the horizontal carrying chain, and a plain, vertical stick

* To be presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 15-18, 1932. Written discussion of this paper will be welcome and should be sent to J. J. O'Connor, Mead Corporation, Chillicothe, Ohio.
Contribution of the TAPPI finishing, processing and converting committee.

[1] Assoc. member TAPPI, engineer, J. O. Ross Engineering Corporation, 122 E. 42nd Street, New York, N. Y.

drop with baffles to help straighten out the sticks as they fall. Later on, a chain carrier with reverse knockers was used to carry the stick down from under the loops, requiring a shorter stick drop. When a long dead rail is used to give the necessary time allowance for changing bundles, the sticks must be pulled by the sheet a great distance, with the danger of the stick not pulling off straight, and dropping from the rack. This is especially so with wide goods on account of the greater misalignment at the chains for a given angle of one sided pulling. A slow moving rail was introduced to take the place of, or supplement the dead rail to prevent this long pull. Improvements have been made on the

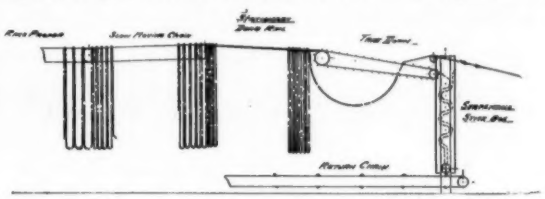


Take Down End Festooner

FIG. 5

stick drop, the present design having either a series of vertical and angular channels, or a curved, serpentine groove. Figs. 5, 6 and 7.

One condition that has always given trouble with single coated paper is the curling under of the edges of the sheet as it leaves the coater. This is due to the fibres on the top side of the sheet being wetted and expanding, and the under side fibres not expanding. With double coated paper this condition does not exist. Steam, or water sprays are often applied to the underside edges to lessen this curl. An important change in the design of the festoon rack to overcome this curling effect was to use a straight pass conveyor system with cross sticks spaced on about four foot centers, set between the suction apron and the incline. The speed of the paper is controlled relative to the conveyor speed so that a shallow loop is formed between the sticks. This prevents the



Take Down End Straight Line Festooner

FIG. 7

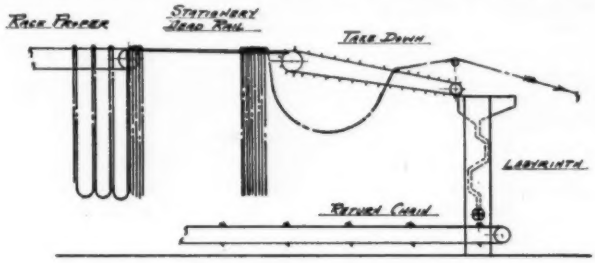
edges from turning under, until the top side is partially dried by the air applied above the conveyor. Another advantage of the straight pass section is the elimination of wrinkles due to cross expansion of the wet sheet. With a long loop, the weight of the loop is enough to keep the paper from moving out freely on the stick, thus causing wrinkles whereas the short loops on the straight pass readily permit this expansion to take place. Equal expansion in all directions means the absence of troubles in the printing department. Fig. 8.

With the mechanical end worked well into shape, the drying was again given more thought with the idea of getting still higher speed and yet maintain low drying temperatures.

Drying Principles

The amount of heat supplied to take care of the drying load is a product of the weight of air circulated and the temperature drop, which is the difference between the temperature of the entering air and that maintained in the drying chamber. For a definite maintained temperature and a definite drying load, the more air being circulated, the smaller will be the temperature drop. A small temperature drop means that the bottoms of the festoon loops will get air at almost the same temperature as the portion near the carrying sticks, resulting in uniform drying.

With the small drop, the temperature of the entering air is low



Take Down End Straight Line Festooner

FIG. 6

and is suited to the use of low pressure exhaust steam to maintain the most economical steam balance in the mill.

The rapid circulation, due to using a large amount of air, sweeps away the film of damp cool air which always adheres to a drying sheet. This film acts as an efficient insulating blanket, through which the heat must pass to get to the sheet, and through which the water vapor formed by evaporation must slowly diffuse. Many tests have been made by various authorities to show the effects of air velocity on the removal of this film and the rate of drying. These tests show that the rate of evaporation is practically directly proportional to the velocity of the air over the surface. Thus, for the ideal low temperature festoon drying system, a large volume of air should be used with rapid circulation.

The New Reflex System

A new type of air distribution, known as the "Reflex" drying system, has been devised, which, by use of the injector principle and a novel arrangement of the nozzles causes a rapid circulation of a large volume of air without pumping all the air through the apparatus and duct work.

FIG. 8

The reflex idea is the creation of C. J. Merrill, of Portland, Maine, who has had considerable practical experience in paper drying problems and has done consulting work in New England.

Fig. 11 is a cross section sketch showing the location of the ducts, nozzles and deflector plates. The heated air being discharged horizontally at a high velocity from the two sets of nozzles draw in a large volume of air from the drying room itself, and the mixture is deflected downwards into the loops. A rapid eddying circulation of the entire air in the drier is produced. The deflector plates are set so that there is a space between the plates and the nozzles and between the plates and the ducts. This allows air from above the plates to be drawn in by the injector effect, as

well as the air below the nozzles. Complete circulation is thus attained in the drier enclosure with the elimination of dead air pockets and with uniform temperature.

Drying Enclosures

After operating many years with all the coaters, drying lines and winders in one large room, it was realized that this arrangement was not suited to good control of drying or to good and efficient operating conditions. The entire building was kept at the drying temperature, and the heat losses in winter were enormous. When the roof was high or peaked, the temperature was considerably higher at the roof than where the drying was taking place, further increasing the heat losses. The operators of the coaters and winders worked in a hot humid atmosphere, which did not bring out their best efforts. The roofs would continually rot out due to condensation, and increased the plant upkeep.

At the present time the better mills have completely enclosed the drying sections, having only a slot where the paper enters and leaves, and a top partition or false ceiling to save the roof and cut down heat losses. Some tunnels have been built with open ends but this defeats control of the air, as cold air is drawn in along the floor, and the hot vapor laden air escapes from the top and leaks all over the mill.

Individual Drying Units

In order to control the drying of each line it is desirable that each line have its own enclosure and drying apparatus. If the several lines are small and drying the same kind of paper with the same amount of coating at all times, it is possible to get good results with one apparatus to the group. But where varying coatings and paper are run, it is imperative that there be individual units. Then each line can be operated according to the temperature and humidity best suited to the product being dried.

Multiple Unit Lines

On the new wide higher speed lines, it is better to use two or more sets of apparatus. One large unit, although a little less expensive, would probably be unwieldy, and in some places, actually impossible to fit into the space available. With the sheet exposed to the drying air for a considerable length of time, as in festoon drying, there is a limit to the temperature at which the sheet should be finished. When the sheet is still wet it is possible to use higher temperature, because a wet sheet will not rise above the wet bulb temperature of the drying air, which is generally low. When one unit is used, the wet end drying temperature is limited by the dry end requirements, but with two units additional drying speed can be had by taking advantage of the higher possible temperature at the wet end. Two units help in the economy of the drying, by exhausting from the dry end into the wet end zone. This saving will more than compensate for the additional first cost.

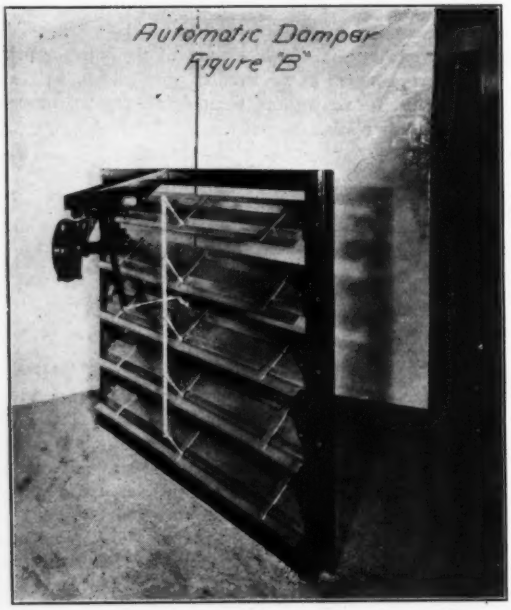


FIG. 10

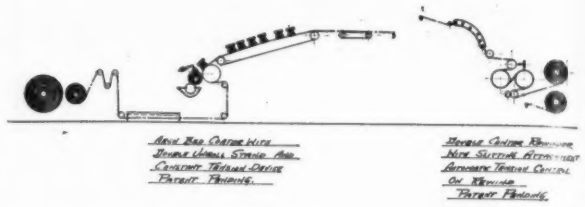


FIG. 9

Automatic Temperature and Humidity Control

A drying line that is completely enclosed, and independent of other lines can be equipped with automatic controls to produce a very uniformly dried sheet which is demanded by the printers and lithographers. Automatic control, besides giving a uniformly dried sheet, will materially cut down on the steam required.

A wet and dry bulb recording controller is used to regulate the amount of steam delivered to the heating coils and controls the amounts of both fresh air admitted and vapor laden air exhausted. If the weight of coating varies, and hence the amount of water to be evaporated, the control will call for more or less steam as the case may be. The control is based on the principle of the temperature drop and acts as follows: The control is set to maintain a definite temperature in the drying chamber. The temperature of the incoming air is such that it will drop to the desired maintained temperature after doing its work of heating and evaporating. If the load is increased, by speeding up the rack, or by putting on more color, the temperature drop will be greater, which means that the maintained temperature will tend to decrease. However, as soon as this temperature goes below that for which the control is set, the valve in the steam line is automatically opened to take care of the extra load. If the load is reduced, the action is the reverse, cutting off steam to the coils.

The wet bulb control operates the exhaust and fresh air dampers. Dampers for this work must be balanced so that they are quick-acting and rugged enough to give long service. A special

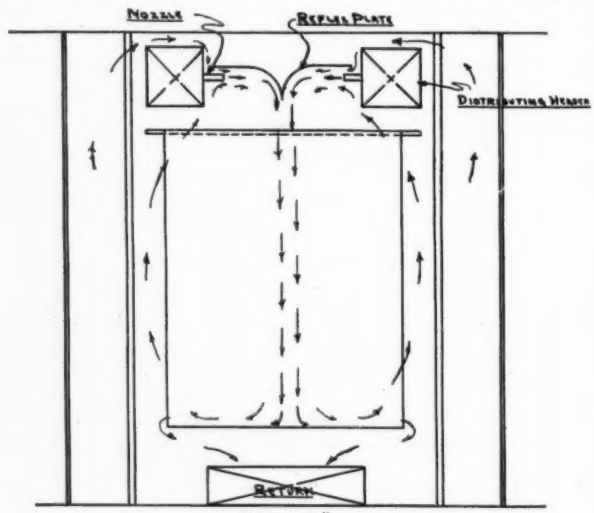


FIG. 11

construction has been worked up after many tests, with ball bearings and ribbed blades. A damper for this purpose is shown in Fig. 10.

Overdrying When Rack Is Stopped

A trouble often experienced in drying coated paper is overdrying the material hanging up when the rack is stopped. With a well designed coating and festoon system, the stopping of the rack for any considerable time should not be required. The causes of shut-downs are mainly the changing of bundles, breaks at the coater or winder, or adjustment at the coater. With a double unroll stand a flying paster can be made when changing bundles. If a double rewinder is used, a quick change can be made from one shaft to the other without stopping. Even with straight pass driers where the use of a dead rail is impossible, it is not necessary to stop the paper going through the dryer. If there is a break, or adjustment is required at the coater, the coater should be stopped but the rack should continue moving, the connecting splice being made at the rewinder. A separate drive or clutch arrangement should be used to operate the rack independent of the coater. Fig. 9.

If, however, there is no alternative but to shut down the rack for a number of minutes, there are several arrangements which can be worked out. The automatic control will take care of this to a large extent, as when there is no more water to be evaporated, the steam is shut off. In addition to the steam being cut off, the exhaust dampers might be opened wide, and fresh cool air admitted between the heaters and the fan. The circulating fan might be shut down, or a damper in the supply line closed. All of these operations could be arranged automatically. With any of the methods, outside of the automatic humidity control, the conditions in the drier will be severely altered and some time will be required after the rack is started to reach the control point again.

Drying Economy

Steam is required in the drying of paper to (1) raise the temperature of the sheet from the entering temperature to that at which it leaves the drier; (2) heat the water content up to the temperature of evaporation; (3) furnish the latent heat of evaporation; (4) superheat the water vapor from the evaporating temperature to the temperature of the exhaust; (5) take care of the radiation losses from the drier enclosure and duct work; (6) furnish the sensible heat in the vapor and air mixture in the exhaust.

The most important items as far as desired heat savings are concerned are the radiation losses and the heat thrown away in the exhaust.

A good insulated drier enclosure and automatic temperature control within that enclosure will give the minimum heat radiation for a given production. Housings have been built up of hollow tile blocks, wall board or built up removable panels. These panels are made up with 1 inch or more of mineral wool insulation between two thicknesses of sheet metal. Large windows and access doors should be provided for observation and access purposes. Besides improving the economy, drier housings are absolutely necessary to completely control the drying.

The amount of air to be exhausted must be arrived at by an economic compromise. The rate of drying is a function of the difference between the dry and wet bulb temperatures. The more air is exhausted, carrying away more water vapor, the lower the wet bulb temperature will be, and the greater the drying speed. Working opposite to this is the extra amount of heat thrown away in the exhaust to secure the additional speed. Hence a balance must be made of the advantages of extra production against a saving of steam. Automatic humidity control recorder charts permit a convenient means of checking this balance and of securing the minimum amount of exhaust all year round.

It should be noted that as the maintained temperature is increased, the amount of exhaust can be reduced for the same or increased drying speeds, and the less is the effect of the varying outside humidity throughout the entire year.

If two or more apparatus units are used to one drying line, the steam economy can be improved by delivering some or all of the dry end unit exhaust to the wet end unit where a higher temperature can be used to offset the higher humidity.

In conclusion, may it be said that in connection with all of the above phases of the drying of coated paper, careful thought and analytical study applied to rearranging or rebuilding the drying systems will be generously rewarded by a better and more uniformly dried product and lower operating costs.

During the past year or so a considerable amount of development work has been done with the roll coaters and high temperature straight line drying. It is expected that in the near future another paper can be presented outlining this advancement.

Drying Paper on Yankee Driers*

By R. S. Wertheimer[1]

The purpose of this discussion is to present facts accumulated over a period of several years on drying rates and effects of air scavenging on the drying of M. G. papers. As the technique of taking samples has been found most important in getting at the true facts, that also will be discussed.

The paper machine on which the data was accumulated is equipped with a 12 foot diameter cast iron drier 180 inches total face, on which a 170 inch sheet is dried. The drier shell is uniformly 2 inches thick, turned inside, and ground, and highly polished outside. The drier heads are stayed by means of the hollow cast iron shaft construction, through one end of which steam is admitted and through the opposite end condensate is removed by means of buckets. In all of the tests steam pressure was maintained uniformly at 35 pounds gauge.

As it affects drying to some extent, a short discussion of the pressure roll arrangement is given. The roll itself is excessively stiff, admitting of very slight deflection under load. It is maintained in contact with the drier with a nip pressure of between 175 and 225 pounds per inch of contact. The pressure is applied by means of direct acting hydraulic cylinders, so that any slight eccentricity of either pressure roll or drier does not affect the nip pressure.

The drier hood is of sheet iron construction, fitting the contour of the drier with a gradually increasing eccentric space between drier and hood of from 3 inches on the horizontal axis to 6 inches at the outlet on top. Scavenging air is admitted by means of two ports on the horizontal axis, one on each side of the dryer. The exhaust vapors are collected at the top of the hood in a wind box and removed by a fan. An air volume of about 10,000 c.f.m. of atmospheric air is circulated through the hood.

Sampling Method

Before proceeding with the test data a short description of the technique found most satisfactory will be given.

It was found that sampling the wet sheet just before the pressure roll was best accomplished by starting a streamer at the center of the sheet and stripping it out at a slight angle with

* To be presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 15-18, 1932. Written discussion of this paper is welcome and should be sent to M. H. Teaze, 200 Fifth Ave., New York, N. Y.
Contribution of the TAPPI Heat and Power Committee.
[1] Member TAPPI, resident manager, Longview Fibre Company, Longview, Wash.

the axis of the machine until it runs out to the edge. This procedure is, of course, repeated both ways from the center. The sample is immediately put in screw top jars to await moisture determination. It was found that the moisture content of the sheet could be checked within 1/10 per cent by this method of sampling, whereas if small samples were removed in three or four places across the sheet, the results could not be checked closer than 1.5 to 2 per cent. These samples were removed at the point where the top felt and sheet break over the tail roll before the pressure roll.

It is well known that samples taken at this point do not represent the true moisture conditions of the sheet an infinitely small distance after the nip of the pressure roll; however, it is obviously impossible to obtain a sample after the pressure roll before some evaporation has taken place. Consequently, for purposes of comparison the tests taken before the pressure roll will be used. There is every indication that the top felt receives some water from the sheet at the pressure roll nip.

It has been found that the position and steadiness with which the sheet leaves the drier, under the influence of the spring roll, is a close indication of the moisture content of the sheet at this point. This is true for any given weight. The tests were all made with a final dryness of 94 per cent bone dry on sheets which were completely dried on the M. G. drier. Papers over 35 pounds (24 x 36—480) basis weight are taken from the M. G. drier at a dryness which would admit of complete evaporation on four subsequent smaller driers.

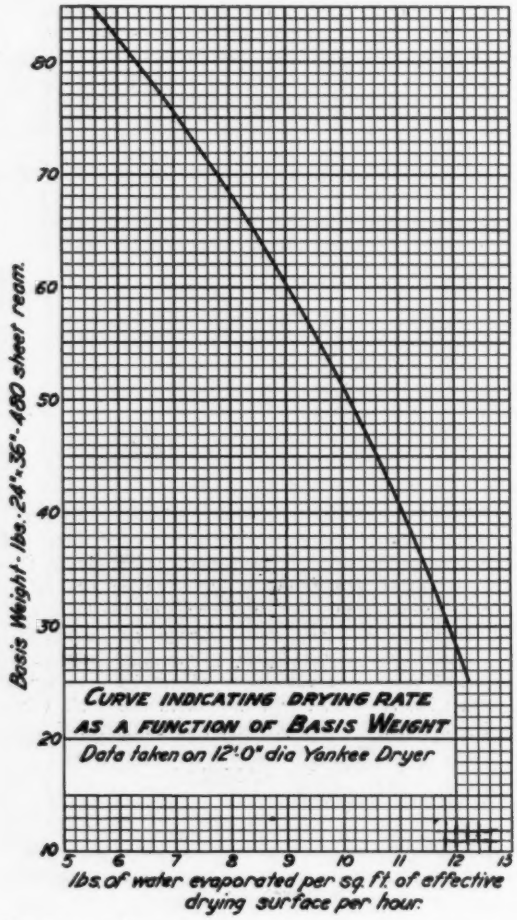
The method used in observing humidity conditions in the drier hood was by means of ordinary wet and dry bulb temperature determinations. The only alteration to standard equipment necessary was to provide a positive means of keeping the wet bulb wick saturated under the high temperatures involved.

The results of the various tests made on this machine are best illustrated in a table given herewith and graphically illustrated by a curve of basis weight versus the factor of evaporation.

DATA COVERING TESTS MADE ON 12'0" X 180" FACE M. G. DRIER

Total drying surface: 566 sq. ft.
Drying surface in contact with sheet at one time: 488 sq. ft., or 79 per cent.
Steam pressure: 35 pounds per sq. in. G.

Basis weight, pounds, 24x36, 480 sheets	Machine speed, feet per minute	Trim, inches on drier	Pounds paper per hour bone dry	Per cent bone dry sheet entering drier	Per cent bone dry sheet leaving drier	Pounds water evaporated per hour	Pounds water evaporated per pound bone dry paper	Pounds water evaporated per hour, total surface	Pounds water evaporated per hour, effective surface	Average evaporation per hour of effective surface
25	410	170	2820	31.81	94.0	5500	1.955	9.7	11.3	
			2820	32.55	94.0	5340	1.890	9.4	10.9	
			2820	32.17	94.0	5400	1.925	9.55	11.0	
			2820	29.11	94.0	6300	2.230	11.1	12.9	11.5
25	440	170	3040	29.83	94.0	6500	2.145	11.4	13.3	
			3040	30.55	94.0	6325	2.08	11.15	12.95	
			3040	30.67	94.0	6250	2.06	11.05	12.8	
			3040	27.87	94.0	7275	2.39	12.8	14.9	
			3040	30.77	94.0	6200	2.04	10.9	12.7	
			3040	31.22	94.0	6100	2.01	10.78	12.5	
			3040	32.90	94.0	5650	1.86	10.0	11.6	
			3040	30.2	94.0	6450	2.12	11.4	13.2	
			3040	30.0	94.0	6500	2.13	11.5	13.3	
			3040	30.8	94.0	6200	2.04	10.93	12.7	12.9
25	420	170	2875	30.8	93.1	5800	2.02	10.25	11.9	11.9
60	215	170	2950	31.45	77.97	4360	1.48	7.70	8.9	
			3100	35.44	81.67	4040	1.30	7.10	8.25	
60	210	170	3000	32.43	80.8	4450	1.49	7.85	9.12	
			3175	35.95	85.5	4375	1.38	7.70	8.95	9.42
85	160	170	2700	33.22	66.95	2725	1.01	4.81	5.60	
			2900	37.85	71.95	2620	.905	4.63	5.36	5.48



It will be noted that the preponderance of data was accumulated on 25 pounds basis weight paper—that weight constituting the greater bulk of production on this particular machine.

Regarding the air scavenging of the water vapor, in general it may be said that air temperatures play a very minor part in the acceleration of evaporation.

It has been found that scavenging air at entrance with a temperature of 190 deg. F., with a corresponding wet bulb of 105 deg. F. giving a relative humidity of approximately 5 per cent, gives satisfactory results. Higher dry bulb temperatures do not produce appreciably higher overall drying rates even when carried to inlet temperatures of 450 deg. F.

Excessively high air temperatures have been experimented with on this machine by use of an oil fired hot air furnace. Air temperatures up to 450 deg. F. have been tried on various weights of paper with almost no perceptible increase in drying rates.

It is thought that a case hardening effect occurs with excessively high temperatures in which the outer fibers of the sheet are dried so much more rapidly than the remainder of the sheet that the fibers nearest the drier are effectually insulated from the hot air playing on the outside of the sheet. This results in the water vapor, driven through the sheet by the heat supplied from the drier, encountering more resistance to escape than is the case under more moderate temperatures. This theory is borne out by the fact that very slight drying rate increases were noted on light weight papers (up to 30 pounds), however, above that weight no increase whatsoever was noted.

It has been found that if the relative humidity of the vapors at the outlet of the hood rise above 40 per cent the drying rate is reduced. It is advantageous to maintain this maximum relative humidity by the use of a relatively large quantity of air at moderate temperatures rather than by use of higher temperatures and smaller air volumes.

Quantitative tests have been made to show the effect of air scavenging on drying rates on this machine. It has been found that the drying rate is increased from 20 to 23 per cent by the use of hot air over the drier, as against natural circulation.

POWER PLANT SECTION

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Packing Lubrication*

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The tax imposed upon the paper making industry by faulty, or improper packing is probably greater than any other burden of a preventable nature. True, the initial cost of the packing and even of its installation entails no great expenditure, but the improper use of packings and the abuse of stuffing boxes that is so general may easily be responsible for many mishaps that are truly costly. Power losses of serious magnitude, repair and replacement expenses out of all reason and loss of much valuable time are measures of the toll exacted by faulty packing in hundreds of pulp and paper mills.

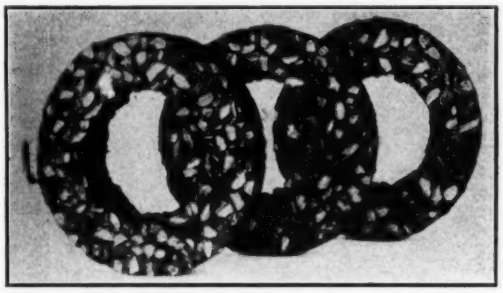
The impression prevails quite generally that packings are employed in valves, pumps and other machine parts used in power equipment, in joints, connections, stuffing boxes, etc., simply to insure against leakage of either the actuating medium, such as steam, or of the medium handled by the pump, compressor, etc. This is perfectly true as a primary requirement, but if a distinction is made between packings proper and gaskets, the function of packings in stuffing boxes is much more complicated. The packed stuffing boxes may very well be likened to plain bearings, in that suitable lubrication is of vital and outstanding importance.

This comparison of packed stuffing boxes with plain bearings is most apt, moreover, and serves well in focusing attention upon the fallacy of subjecting the packing in a stuffing box to excessive gland pressure in an effort to stop a leak, or to prevent one. In the case of the packing box, the procedure that is very much too common is for the operator to tighten up the gland on noting any indication of a leak. If a bearing were giving trouble, the same operator would not be so apt to tighten up the bearing with the likelihood of making matters even more serious. He has some appreciation of journal friction, but is quite apt to fail to appreciate that packing friction may be just as costly.

A shaft or rod scored or tapered in passing back and forth through a stuffing box under excessive gland pressure is often a more serious mishap than having a shaft scored by an ill fitting journal box. In an emergency, the location of the bearing can sometimes be shifted, but the shaft damage caused by the stuffing box entails, usually, expensive repairs and costly loss of time.

Friction is the cause of the scoring in either case and the prevention of the damage is, likewise in either case, by suitable lubrication. This is generally recognized, it would appear, only in connection with the bearings, for packing scoring is almost invariably attributable to an absence or curtailment of packing lubrication. The act of taking up a stuffing box to stop a leak serves to deplete the supply of lubricant and to increase rod friction. This fact may not be at once apparent, for the reason that the extra pressure on the relatively soft, absorbent packing will often stop the leak for the time being. Invariably, however, the stoppage of the leak is effected by an impairment in the efficiency of the stuffing box.

While the packing is fresh and well impregnated with lubricant, taking up the stuffing box gland will liberate some of the stored lubricant, of course, and while this is the function of the stuffing box construction and is a utilization of the lubricating properties of the packing, it is also a drain upon the lubricating reserve or capacity of the packing, a shortening of the useful life of the packing. Not only is the essential lubricant supply diminished by the act of squeezing the lubricant out of the packing, but the frictional load imposed by the packing is aggravated. The clearance between the packing and the shaft decreases and the thickness of the lubricant film is reduced, with the result that the lubricant is consumed more rapidly, more frictional heat being generated. Not only is the generation of frictional heat accelerated, elevating the demand for a lubricant supply from a contracting reservoir, but more and more frequent becomes the need of taking up the stuffing box to prevent leakage. Greater wastes are imposed by aggravated packing friction, in an effort to circumvent the development of leaks that are often far less serious, with the final result, unless the box is promptly repacked, of total packing destruction and serious rod, or shaft, damage.



Courtesy: Rains Metallic Packing Co.

FIG. 1

Packing rings composed of equal proportions of packing metal and lubricant impregnated wood granules.

* For previous discussions on packings see PAPER TRADE JOURNAL, Nov. 22, 1928 and June 6, 1929.

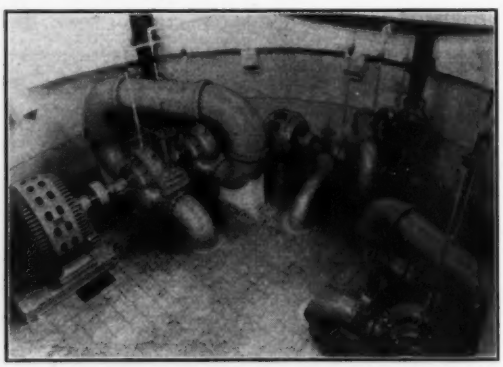
Importance of Packing Clearance

The part played by the clearance provided for the lubricant film between the packing and the rod or shaft is illustrated in a convincing manner by the results secured with so-termed labyrinth packings in multi-stage, impulse type, steam turbines. This labyrinth construction is resorted to in order to control and limit the leakage of steam between successive stages by throttling action and it is the effectiveness of the method that is pertinent and of interest. With the clearance edges of the throttling rings made from 0.01 to 0.015 inch, the leakage through the labyrinth packing can be held down to 2 or 3 per cent. The number of rings to secure such results varies, of course, with the steam pressure, but the amount of leakage varies, of course, with the steam pressure, but the amount of leakage varies with the clearance thickness. The clearance for a suitable running or sliding fit between journals and bearings, a clearance considerably greater than is required for efficient packing clearance, is only a small fraction of the customary labyrinth packing clearance, under which conditions leakage is to all intents and purposes entirely eliminated, provided the length of the bearing is sufficient, or, in the case of the stuffing box, if the depth of the box is adequate.

A lubricant film of a thickness even less than the clearance required for a running bearing-journal fit, provided again that the packing box is of sufficient depth, will successfully prevent leakage even under conditions of very heavy pressure. On the other hand, the clearance is so small that there is always grave danger of the film being punctured by the packing when any take-up of the stuffing box gland is attempted. It is this puncturing of the lubricant film, allowing the packing material to come in contact with the rod or shaft, that is productive of the damaging packing friction, resulting in loss of power, scored shafts and, in time, the ruination of the shaft or rod.

This importance of the lubricating film in effective packing service, which is as great or even greater than the adequate and suitable lubrication of journal bearings, was stressed in previous discussions in these columns,[1] but with the present trend toward the employment of continually higher steam pressures, calling for better and improved packings, the temptation grows to abuse the stuffing boxes by subjecting them to dangerous degrees of gland pressure. The increasing use of metallic packings, solid and flexible, is also traceable in large part to film failures when tightening up stuffing boxes employing the softer packings. Lubrication is just as essential, however, for metallic and semi-metallic packings.

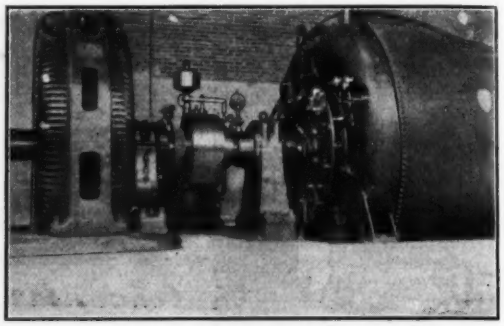
[1] PAPER TRADE JOURNAL, June 6, 1929.



Courtesy: Rains Metallic Packing Co.

FIG. 2

Centrifugal pumps run more than five years with semi-metallic packed stuffing boxes.



Courtesy: Rains Metallic Packing Co.

FIG. 3

Water turbine packed July 7, 1924, and still in continuous service, with excellent stuffing box conditions and every indication of the packing lasting for several more years.

Packing Lubrication

Where solid metallic packings of the floating variety are employed, packings that may be considered incompressible, the lubricant film, obviously, forms the seal between the rod or shaft and the packing. These packings typify excellence in packing service when they are kept suitably lubricated. That is, when properly serviced they minimize frictional power losses and are extremely durable. There are instances on record where such packings have given twenty and thirty years of care-free service, requiring no adjustments or attention other than periodic lubrication. A lubricant of suitable consistency and quality has to be employed, of course, and provisions for the admission of the oil is quite customarily provided between the first and second pairs of packing rings.

Where flexible metallic packings are employed, such packing being made up of metal foil in various forms and dimensions to provide packing flexibility and plasticity, there are numerous and frequent "voids" for the accommodation of the essential lubricant supply. These packings, while flexible and somewhat plastic, are not as easily compressed as the more pliable soft packings and they also provide a more copious lubricant supply. Nevertheless, they are not indestructible and if subjected to too great gland pressure will cause trouble. That is, they do not entirely eliminate all possibilities of stuffing box abuse, but they do greatly reduce the liability of shaft damage. When they become dry and hard, however, they should be promptly replaced, in order not to delay replenishment of the essential lubricant supply.

Likewise, for services where fibrous packing is either necessary or advisable, proper packing lubrication is the outstanding requirement for evading heavy maintenance expenses and costly power losses. Literally, each strand of fibrous packing should be impregnated with a suitable lubricant and, as no great amount of reserve lubricant can be stored in the packing, very little stuffing box adjustment should be attempted. If leaks develop after such packings have been adjusted to function satisfactorily, it is an unfailing sign that the lubricant feed is inadequate and that prompt replacement of the packing is advisable. Further adjustment of the stuffing box gland pressure is apt to invite only trouble and at best can only effect a temporary relief.

Semi-Metallic Packing Characteristics

An interesting variety of packing that has been found to possess the three characteristics required for economical packing service; high sealing capacity, durability and effectiveness in imposing little frictional load; is a semi-metallic combination of suitable packing metal and lubricant impregnated wood granules. The formation of the packing is not only distinctive, but the excellent re-

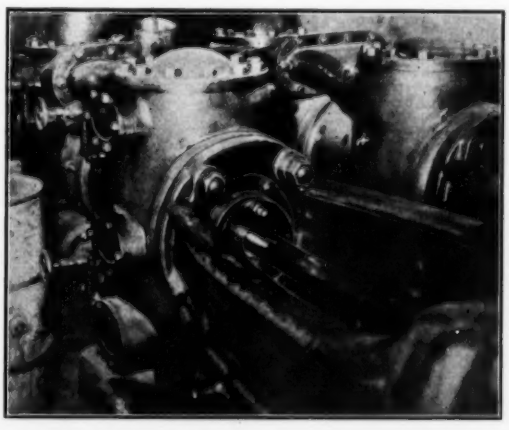
sults secured with it in service is conclusive confirmation of the very essential nature of the lubricant film in securing effective packing service.

Granules of a suitable packing metal alloy, tough yet reasonably soft and prepared by running the packing metal through a special cutting machine to secure granules of about the same size and various shapes, are thoroughly and intimately mixed with a like proportion of similar wood granules which have been thoroughly impregnated with a suitable lubricant by a boiling process and placed in cloth containers to form packing rings, or annular units, for insertion in packing boxes. As each ring is installed, it is tamped into place in the stuffing box, breaking joints between rings, and when the stuffing box is filled, leaving only sufficient space for the stuffing box gland to be firmly caught, the machine is started up and the stuffing box gland gradually taken up with the packed rod or shaft in motion. . .

The tightening of the gland causes the granules to arrange themselves in conformity with the shape of the rod or shaft, during which adjustment there is period during which the packing heats up, but just as soon as the packing is suitably accommodated and the essential lubricant film sealing the box has been created the packing cools off and remains cool. Further adjustment of the gland pressure is unnecessary until there is an indication of a leak developing, when a very slight take-up will suffice to effect a prompt re-seal. The rapidity with which a new seal is effected is due to the fact that when a leak becomes imminent the granules composing the body of the packing become free to move in toward the shaft or rod and do so wth only a slight movement of the stuffing box gland.

Another pecularity of this distinctive form of packing and one that is extremely valuable is that neither the packing nor the rod or shaft are injured by tightening the stuffing box gland. A waste of lubricant may result, but the resistance of the granules of metallic friction material to compression and the copious lubricant supply readily liberated from the wood granules combine to maintain a suitable sealing lubricant film under even the most intensified stuffing box abuse. In confirmation of this statement, the results of an exacting physical test can be advanced.

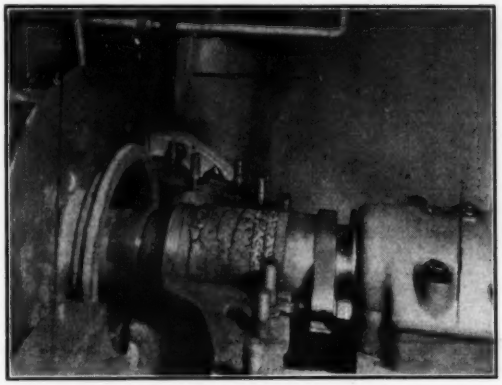
This test was made in connection with the packing of pump in boiler feed water service. With only 60-pound air pressure actuating the pump, an effort was made to stop the pump by tightening up the stuffing box gland. A 6-foot wrench was employed, but despite the great pressure applied with such leverage the pump could not be stopped. The same attempt was then made with 40-pound steam actuating the pump, but also without success. With fabric type packing in the stuffing box, on the other hand, no difficulty was experienced in stopping the pump by taking-up the stuffing box gland even when the pump was actuated by 250-pound steam pressure.



Courtesy: Rains Metallic Packing Co.

FIG. 4

Pump packed nine years ago, yet the original plungers are only highly polished and show no signs of wear.



Courtesy: Rains Metallic Packing Co.

FIG. 5

Head of centrifugal pump, showing condition of semi-metallic packing rings after five years of uninterrupted service. Even the original bronze sleeves are still intact.

Other tests have demonstrated that packing friction, as compared with that developed by commonly used fibrous packings, is reduced from 40 to 68 per cent by the employment of this distinctive wood-metal granule packing. The reason for any such marked superiority is, of course, the maintenance of an adequate lubricant film seal under all conditions, made possible by the copious lubricant reserve adequate for promptly and automatically meeting all demands.

Evidence of the durability of the packing, also attributable to the large and easily drawn upon lubricant reserve, is evidenced by such service records as the following, which are reported to be quite typical. Centrifugal pumps, even where bronze sleeves are employed, are said to show no wear after six years of continuous operation, the pumps running day and night. In plunger pump, air compressor, vacuum pump, steam engine, boiler feed pump, hydro-electric equipment, valve services and the like, these packings with adequate automatic lubrication are reputed to have given seven and eight years of continuous operating service. In all these instances, the original shafts, rods and plungers, which formerly required replacement at comparatively frequent intervals, are not only still in service, but are in a highly polished condition only and show no appreciable wear.

Still another conclusive indication of the value of packing lubrication is the fact that as the lubricant is slowly, but unavoidably, consumed and space is made in the stuffing boxes, additional packing rings of this distinctive wood-metal packing may be added without having to remove the old rings. Another economy effected by the semi-metallic granule packing is that water lanterns, or seal rings are unnecessary and the ordinary standard depth of stuffing box may be somewhat shortened.

All these advantages are to be attributed to the fact that adequate and automatic lubrication is supplied, irrefutable evidence of the value of a plentiful and unfailing lubricant supply in effecting satisfactory packing service. Whatever the variety of packing, suitable lubrication is a dominating requirement. It is the lubricant film seal that insures economical operation of virtually all equipment, for packed stuffing boxes as well as for journal bearings.

Obituary

Thomas J. Rogan

FITCHBURG, Mass., January 28, 1932.—Thomas J. Rogan, 48, vice-president of Fitchburg Paper Company, in charge of production, died at 4 o'clock this morning at his home, 4 Eaton street, of heart disease, following an illness of six weeks.

Mr. Rogan, who was widely known in the manufacturing branch of the paper making industry, was a resident of Fitchburg for 23 years, during which he won hosts of friends.

Announcement of his death, although expected, as his last illness followed a previous attack which weakened him, resulted in expressions of regret in all parts of the city.

He was a member of Fitchburg lodge of Elks, the Holy Name Society of the Sacred Heart Church and the Connecticut Valley Paper Mill Superintendents' Association, in which he was a past president.

Thomas J. Rogan was born at Mechanicsville, N. Y., September 13, 1883, son of Mrs. Janet and the late Thomas Rogan. He was educated in his native city.

At an early age Mr. Rogan learned the papermaking trade at the West Virginia Paper and Pulp Company mill at Mechanicsville. From there he went to the Champion Coated Paper Company at Hamilton, Ohio, and he was with the Oxford Paper Company at Rumford, Me., before joining the Fitchburg Paper Company.

Mr. Rogan was with the Fitchburg Paper Company since September, 1909, starting as machine tender at No. 1 machine. In April, 1911, he was transferred to No. 6 mill to have charge of the biggest machine operated by the company at that time.

He was made superintendent of No. 3 mill in 1915; of No. 4, the largest, the next year. On August 1, 1923, he was appointed general superintendent of all the company's mills. In April, 1931, he was elected vice-president in charge of manufacturing.

He is survived by his mother, Mrs. Janet Rogan of this city and Mechanicsville; his wife, Mrs. Mary (Colbert) Rogan; five children, Janet, Thomas, Margaret, William and Eleanor; two sisters, Misses Helen and Lillian Rogan, of Mechanicsville.

Byron F. Horne

LAWRENCE, Mass., January 25, 1932.—Byron F. Horne, president of J. H. Horne & Sons Co. of this city, manufacturers of paper mill machinery, died Saturday midnight at his home, 242 Main street, Andover. He had been ill only two days.

He was born in Graniteville, May 30, 1851, coming to his city at an early age. He lived here for many years and transferred his residence to Andover in 1916.

The deceased and his father, the late J. H. Horne, were he founders of J. H. Horne & Sons Co. In 1894, at the death of the elder Horne, the deceased became president of the concern and held the office continuously up to the time of his death.

Mr. Horne was prominent in social and fraternal life. He was a member of Aleppo Temple, Mystic Shriners and a former member of the Ancient and Honorable Artillery Company. He was also a 32nd degree Mason.

The Lawrence Home for Aged People was one of Mr. Horne's major interests. He served as vice-president of the governing board and a trustee of that institution, both of which offices he discharged very capably.

Mr. Horne attended the Trinity Congregational Church in this city for a number of years. His interest in the affairs of the church was great all during his lifetime. He participated actively in practically every project it sponsored.

He is survived by his wife, Mrs. Mae (Driscoll) Horne; two daughters, Mrs. Mattie E. Cleveland, of this city, and Mrs. Walter Kennard, of St. Petersburg, Fla.; two granddaughters, Mrs. Juan Castelliano, of Nashville, Tenn., and Mrs. Byron R. Cleveland, of Willimantic, Conn., and one great grandchild.

George W. Heisler

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., January 25, 1932—George W. Heisler, 44, sales manager of the Sutherland Paper Company, died Sunday morning at his home in Spruce Drive, a victim of heart trouble. He had not been in the best of health for some time, though able to care for his duties at the plant.

He was born in Appleton, Wis., and had been in the paper business for nineteen years. His last position in the Fox River Valley district was as sales manager of the Menasha Carton Company. He came to Kalamazoo in 1925 to join the Sutherland organization. He is a Mason and also a member of the Commandery, though not affiliated with local organizations.

He is survived by the widow and three children, Evelyn, 15; Betty, 13 and Helen, 7; also a brother and sister residing in Salt Lake City. Burial was at Neenah, Wis., with the commandery in charge of the services.

John Weimer

KALAMAZOO, Mich., January 25, 1932—John Weimer, 54, superintendent of the Lee Paper Company, of Vicksburg, and resident of that village for 25 years, died suddenly last Friday morning. He was born at Coloma, Mich., and gained his first experience in the manufacture of paper at the Watervleit Paper Company. He then joined the Lee Paper Company and was assistant superintendent for several years. On the death of William Wightman, Mr. Weimer was advanced to the superintendency.

He was a Mason and a Knight of Pythias. He is survived by a widow and six children.

Peter Di Santi

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., January 30, 1932.—Peter Di Santi, of P. Di Santi & Co., 1937 South 3rd street, wholesalers of paper stock and rags, passed away last Saturday, following several months illness from a complication of ailments. He was 42 years of age.

Mr. Di Santi had been connected with the Philadelphia paper stock industry for the past 21 years and was a member of the Wholesale Waste Merchants Association. He was associated with Charles McNichol, vice president of the Wholesale Waste Merchants Association in the firm bearing his name.

Improved Lavino Chrome Brick

E. J. Lavino & Co., chrome, magnesite and silica refractories, of Philadelphia, have just issued an interesting and instructive pamphlet regarding Improved Lavino Chrome Brick. Numerous kraft recovery furnaces have been lined for years with Lavino Chrome Brick and many economies in the operation of these furnaces have been made possible. A section of the pamphlet is devoted to the Improved Lavino Chrome Brick in kraft recovery furnaces.

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News print	11,032 rolls
Printing paper	23 cs.
Wrapping paper	18 bls., 12 cs.
Decalcomania paper	20 cs.
Colored paper	33 cs.
Filter paper	15 bls., 15 cs.
Drawing paper	11 cs.
Baryta coated paper	100 cs.
Metal coated paper	68 cs.
Surface coated paper	97 cs.
Coated paper	20 cs.
Photo paper	1 cs.
Coated tissue paper	6 cs.
Paper board	18 cs.
Boards	36 cs.
Card board	113 cs.
Miscellaneous paper	116 cs.

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Brown & Williamson Tobacco Co., Majestic, Southampton, 25 cs.
Brown & Williamson Tobacco Co., Samaria, Southampton, 25 cs.
Standard Products Corp., Ile de France, Havre, 70 cs.
——, Ile de France, Havre, 14 cs.
American Tobacco Co., Ile de France, Havre, 200 cs.
Champagne Paper Corp., Ile de France, Havre, 47 cs.
Champagne Paper Corp., Liberty, Havre, 208 cs.
American Tobacco Co., Collamer, Bordeaux, 100 cs.
De Manduit Paper Corp., Collamer, St. Nazaire, 1209 cs.

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F. J. Emmerich, Baltic, Liverpool, 8 bls.
F. J. Emmerich, Samaria, Southampton, 2 bls.
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Whiting & Patterson Co., Inc., Majestic, Southampton, 1 cs.
Whiting & Patterson Co., Inc., Samaria, Southampton, 2 cs.
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NEWS PRINT

——, Bergensfjord, Oslo, 182 rolls.
Perkins Goodwin & Co., Augsburg, Bremen, 386 rolls.
Jay Madden Corp., Augsburg, Bremen, 151 rolls.
Perkins Goodwin & Co., Berlin, Bremen, 82 rolls.
Parsons & Whittemore, Inc., Berlin, Bremen, 149 rolls.
Jay Madden Corp., Berlin, Bremen, 323 rolls.
Perkins Goodwin & Co., Amer. Shipper, Hamburg, 332 rolls.
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H. Reeve Angel & Co. Inc., Majestic, Southampton, 2 cs.
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Simfred Co. Inc., Ile de France, Havre, 9 cs.
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Corn Exchange Natl. Bank, Kwansi Maru, Osaka, 33 cs.
J. Romer, Kwansi Maru, Osaka, 16 cs.
H. C. Davison, Tai Ping, Yokohama, 1 cs.
H. Reeve Angel & Co. Inc., Tai Ping, Yokohama, 7 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Co. Inc., Winona County, ——, 68 bls. bagging.
D. M. Hicks, Inc., Westernland, Antwerp, 28 bls. flax pulp.
——, Samaria, Southampton, 24 bls. rags.
——, Exmoor, Barcelona, 71 bls. rags.
E. J. Keller Co. Inc., Collamer, ——, 97 bls. rags.
E. J. Keller Co. Inc., West Arrow, ——, 50 bls. bagging.
S. Birkenstein & Son, Cabo Quilates, Barcelona, 110 bls. rags.
E. J. Keller Co. Inc., Liberty, ——, 66 bls. rags.
E. J. Keller Co. Inc., Pres. Roosevelt, ——, 57 bls. rags.

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——, Westernland, Antwerp, 250 bags glue stock.

CASEIN

——, St. Louis, Hamburg, 60 bags.

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Perkins Goodwin & Co., Bergensfjord, Drammen, 125 bls. sulphite.
Atterbury Bros. Inc., Bergensfjord, Halden, 18 bls. sulphite.
E. M. Sergeant & Co., Bergensfjord, Oslo, 180 bls. wood pulp.
Chemical Bank & Trust Co., Bergensfjord, Oslo, 3450 bls. sulphite.
——, Karpfanger, Hernosand, 15732 bls. sulphite, 2622 tons.
Castle & Overton Inc., St. Louis, Hamburg, 140 bls. wood pulp, 28 tons.
Castle & Overton Inc., Sagauche, Kotka, 516 bls. sulphite, 104 tons.
Irving Trust Co., Sagauche, Kotka, 390 bls. sulphate, 65 tons.
——, Sagauche, Kotka, 1436 bls. sulphate, 239 tons; 170 bls. sulphite, 28 tons.
Lagerloef Trading Co., Sagauche, Hango, 983 bls. sulphate, 164 tons; 260 bls. mechanical pulp, 52 tons.
Castle & Overton Inc., Pr. Roosevelt, Hamburg, 548 bls. wood pulp.
E. J. Keller Co. Inc., Havre Maru, ——, 334 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JANUARY 30, 1932

Irving Trust Co., Augsburg, Bremen, 500 bls. wood pulp, 101 tons.
F. Weber & Co., Augsburg, Bremen, 29 bls. wrapping paper.
Castle & Overton Inc., Augsburg, Hamburg, 39 bls. rags.
E. J. Keller Co. Inc., Excelsior, ——, 90 bls. rags.
Amtorg Trading Corp., Exporter, Odessa, 1816 bls. rags.
Bulkley Dunton & Co., Karfanger, ——, 2625 bls. wood pulp, 526 tons.
Johaneson Wales & Sparre Inc., Karpfanger, Sundsvall, 24975 bls. sulphite, 3935 tons; 180 bls. chemical pulp, 36 tons.
Perkins Goodwin & Co., Karpfanger, Sundsvall, 600 bls. wood pulp, 101 tons.
E. J. Keller Co. Inc., Exmoor, ——, 142 bls. rags.
E. J. Keller Co. Inc., Exochorda, ——, 180 bls. rags.
E. J. Keller Co. Inc., Collamer, ——, 242 bls. rags.
P. Berlowitz, Collamer, St. Nazaire, 188 bls. rags.
E. J. Keller Co. Inc., West Arrow, ——, 85 bls. rags.
S. Birkenstein & Son, Cabo Quilates, Barcelona, 39 bls. rags.
F. Weber & Co., Cabo Quilates, Genoa, 6 cs. paper.
Darmstadt Scott & Courtney, Liberty, Dunkirk, 49 bls. rags.
J. M. Hagy Waste Works, Liberty, Dunkirk, 25 bls. rags.
Katzenstein & Keene, Inc., Liberty, Havre, 149 bls rags.
E. J. Keller Co. Inc., Westpool, ——, 62 bls. rags.
Parsons & Whittemore, Inc., Bochum, ——, 600 bls. sulphite.

(Continued on page 58)

Sulphur

A FIRST REQUISITE

in

Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

TEXAS GULF SULPHUR CO.
75 E. 45th Street New York City
Mines: Gulf, Newgulf and Long Point, Texas

AMIJEL

AMIJEL is not an ordinary beater starch—it is a specially processed, pure gelatinized starch—ready for use. Does not have to be cooked. Just add in dry form to the beater.

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QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
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THE DRAPER FELTS

All kinds and styles of Felts for all kinds and styles of Papers.

Write us about your Felt problems and let us help you reduce your Felt Costs—we will call anywhere at any time.

DRAPER BROS. COMPANY
CANTON, MASS.
Woolen manufacturers since 1856

Imports of Paper and Paper Stock

(Continued from page 56)

NEW LONDON IMPORTS

WEEK ENDING JANUARY 30, 1932

Lagerloef Trading Co., Sagauche, Hango, 498 bls. sulphate, 104 tons.

——, Sagauche, Kotka, 3102 bls. sulphate, 648 tons.

BOSTON IMPORTS

WEEK ENDING JANUARY 30, 1932

Parsons & Whittemore, Inc., Augsburg, Bremen, 87 rolls news print.

——, Augsburg, Bremen, 85 rolls news print.

Johaneson Wales & Sparre, Inc., Augsburg, Hamburg, 195 bls. wood pulp.

J. Andersen & Co., Augsburg, Hamburg, 265 bls. wood pulp.

1st National Bank of Boston, Winona County, Manchester, 50 bls. paper stock.

——, Winona County, Liverpool, 75 bls. paper stock.

Johaneson Wales & Sparre, Inc., Karpfanger, Sundsvall, 450 bls. chemical pulp, 91 tons; 2180 bls. sulphite, 386 tons.

Perkins Goodwin & Co., Karpfanger, Sundsvall, 500 bls. sulphite, 101 tons.

Bulkley Dunton & Co., Karpfanger, ——, 500 bls. wood pulp, 101 tons.

Castle & Overton, Inc., Sagauche, Kotka, 685 bls. sulphite, 136 tons.

Irving Trust Co., Sagauche, Kotka, 2545 bls. sulphate, 424 tons.

——, Sagauche, Kotka, 1764 bls. sulphate, 328 tons; 5542 bls. sulphite, 927 tons.

Lagerloef Trading Co., Sagauche, Hango, 750 bls. sulphite, 126 tons.

French Worsted Co., West Arrow, Antwerp, 40 cs. paper tubes.

Mandaloff & Co. Inc., West Arrow, Antwerp, 110 rolls wrapping paper.

Acer & Co. Inc., Atlantic Port, Alice, 3800 bls. sulphite.

PORTLAND IMPORTS

WEEK ENDING JANUARY 30, 1932

Lagerloef Trading Co., Sagauche, Kotka, 130 bls. sulphate, 26 tons; 468 bls. sulphite, 78 tons; 260 bls. mechanical pulp, 52 tons.

——, Sagauche, Kotka, 98 rolls news print; 2071 bls. sulphate, 345 tons; 3136 bls. sulphite, 530 tons.

Lagerloef Trading Co., Sagauche, Hango, 2449 bls. sulphate, 425 tons; 3562 bls. sulphite, 564 tons; 1792 bls. mechanical pulp, 358 tons.

Acer & Co. Inc., Atlantic, Port Alice, 1330 bls. sulphite.

BALTIMORE IMPORTS

WEEK ENDING JANUARY 30, 1932

Maryland Waste Co., Winona County Liverpool, 18 bls. rags.

Congoleum Nairn Co., Collamer, Bordeax, 854 bls. rags.

Congoleum Nairn Co., Collamer, St. Nazaire, 248 bls. rags.

Acer & Co., Inc., Atlantic, Port Alice, 2470 bls. sulphite.

Parsons & Whittemore, Inc., Toledo, ——, 950 bls. sulphite.

NORFOLK IMPORTS

WEEK ENDING JANUARY 30, 1932

Irving Trust Co., Winona County, Manchester, 146 bls. paper stock.

——, Winona County, Liverpool, 86 bls. bagging.

WOOD PULP MANUFACTURERS MEETINGS

(Continued from page 32)

Symposium on Current Conditions of Pulp Manufacture in

The Northeast—S. B. Copeland, Eastern Manufacturing Company

The Lake States—Folke Becker, Rhinelander Paper Company

The South—J. P. Hummel, Hummel-Ross Fibre Corporation

The Pacific Coast—Ossian Anderson, Puget Sound Pulp and Timber Company.

Foreign Pulp Competition from Countries With Depreciated Currency—Reuben B. Robertson, Champion Fibre Company.

Pulpwood Meeting

The Pulpwood Department of the American Paper and Pulp Association and the Fibrous Raw Materials Committee of the Technical Association of the Pulp and Paper Industry announce a joint meeting to be held at Hotel Pennsylvania in Parlor 2 on Monday, February 15.

A program of special interest to technical and wood department men has been laid out. Both morning and afternoon sessions are open meetings; they conflict with no other American Paper and Pulp Association or TAPPI meetings of a similar character. The program of the meeting follows:

10 A.M. Parlor 2.

Common Problems of Technical Men and Wood Department Managers—George N. Ostrander, Finch, Pruyn & Co., Inc., chairman, Pulpwood Committee, American Paper and Pulp Association.

Pulpwood Evaluation—C. E. Curran, Forest Products Laboratory.

Pulpwood Storage and Handling in Woodyard—R. D. Stephens, Eastern Manufacturing Company.

Pulpwood Grading—Howard Churchill, Finch, Pruyn & Co., Inc.

The Timber Conservation Board—Ripley Bowman, secretary.

2 P.M. Parlor 2.

Moving Pictures Logging and Mill Operations—Finch, Pruyn, & Co., Inc.

Purposes of Raw Materials Division of TAPPI—J. L. Parsons, Hammermill Paper Company, chairman, Raw Materials Division of TAPPI.

Fibrous Materials for Paper Making in the Future—Technical Discussion, John Traquair, Mead Corporation, chairman, Fibrous Raw Materials Committee, TAPPI; Economic Discussion, R. S. Kellogg, News Print Service Bureau.

Effect of Kinds and Qualities of Pulpwood upon Pulp Quality—Dr. Otto Kress, Institute of Paper Chemistry.

Pulp Manufacturing Costs—Charles W. Boyce, American Paper and Pulp Association.

Ample Water Supply at Holyoke

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., January 26, 1932—Plenty of water is being afforded the manufacturers this open winter and no less than six feet of water was going over the dam a week ago and between four and five feet yesterday. The big 6,500 h.p. hydroelectric unit is now in full operation and the Holyoke Water Power Company is working over plans for the big enlargement near the dam. Approval of the plans for this new undertaking have been received from the state and federal governments.

Phil Howard Addresses Paper Salesmen

There was an excellent attendance at the regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry on Tuesday at George's Restaurant, New York, despite the inclement weather. Phil A. Howard, of the *American Paper Merchant,* who was the guest speaker, reviewed conditions in the paper industry in the Middle West and the East in an interesting manner. He expressed the view that the Zero hour was passed and that business was gradually improving.

1864 1932

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Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
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CAMDEN, MAINE

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(PAPER MAKERS' ALUM)

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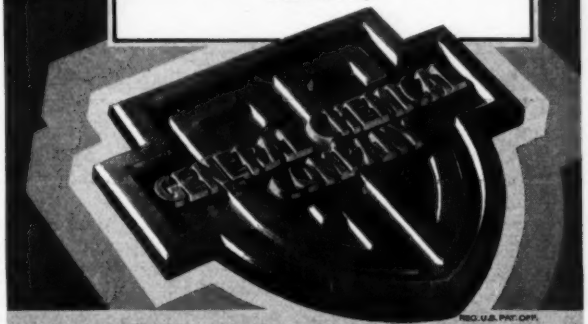
In Canada: The Nichols Chemical Company, Ltd. Montreal, P. Q.



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Prompt deliveries made from stocks in
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PHILADELPHIA
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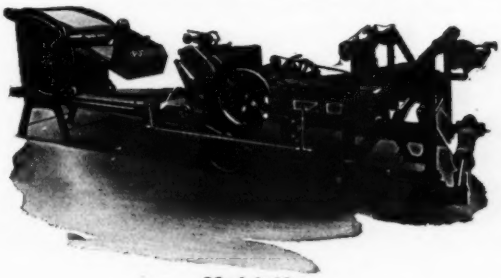

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HIGH SPEED ON LIGHT PAPERS

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1223 38th Street, Dept. 4, Brooklyn, N. Y., U. S. A.
Phones: Windsor 1700-1701-1702

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, February 3, 1932.

Conditions in the local paper market are gradually showing signs of improvement. Demand for the various standard grades of paper is more persistent and inquiries for future requirements are growing. Sales forces of the leading paper houses are becoming optimistic. Prices are generally steady to firm.

News print production in the United States and Canada is being maintained in sufficient volume to take care of current requirements. Shipments are going forward to the publishers in fairly satisfactory volume. The price situation is irregular, although efforts are still being made to stabilize the industry.

Demand for paper board is somewhat better than anticipated. Box board production is proceeding at approximately 63 per cent of rated capacity. The fine paper market is exhibiting a stronger undertone and quotations on book and bond papers are firmer. Tissues are moving in moderate volume. The coarse paper market is steady and some good orders of kraft wrapping paper are being booked at the recently revised prices.

Mechanical Pulp

The position of the ground wood market is practically unchanged. Due to curtailment of output, both at home and abroad, offerings are not excessive and the industry is in a sound statistical position. Supplies are moving into consumption at a normal pace for the season. No further price changes have been reported.

Chemical Pulp

Steadiness prevails in the chemical pulp market. Orders for both domestic and imported grades are being received in moderate volume. Prices are generally maintained at previously quoted levels Imported unbleached sulphite is firmer, due to the recent action of the Swedish manufacturers.

Old Rope and Bagging

Trading in the old rope market is restricted, at present. Demand for both odmestic and imported old manila rope is light. Small mixed rope is moving slowly. Old rope prices, however, are fairly steady. The bagging market is listless. Little interest is being displayed in scrap or gunny bagging. Prices are nominal.

Rags

With the inventory period out of the way, demand for the various grades of domestic rags should become more lively in the near future, as it is reported that stocks at the mills are low and manufacturers will probably be in the market to replenish their supplies of raw materials. Conditions in the imported rag market are unchanged.

Waste Paper

The paper stock market is steadier than of late. Board mill request for the lower grades is fairly persistent. Offerings of some grades are limited and prices are firmer, as a result. The better grades of waste paper are in seasonal demand. Book stock and ledger stock continues to move freely, while hard and soft white shavings are steady.

Twine

The twine market was only moderately active during the past week. Most of the business transacted of late has been along routine lines. There are a fair number of inquiries around for future account, some of which should materialize into good orders. Prices are holding up fairly well, despite keen competition.

New Gummed Papers Out

McLaurin-Jones Company, manufacturers, of Brookfield, Mass., have just brought out a new line of gummed papers, comprising Vivids, Pastels and Gold gummed papers, which include the Ware Luxor, Ware Ideal, Waregold and Wareplatinum gummed papers.

The Vivid Colored gummed line is a decidedly new approach as far as colored gummed papers is concerned and will appeal to those printers who are interested in standardizing on intensive shades to use a sheet which will meet this requirement.

The Pastel Coated gummed is the answer to the growing demand for delicate tones in gummed labels to suit discriminating tastes. The delicate tones arrived at in this line of coated plated papers is a very attractive one.

The Luxor and Ideal Gold gummed papers are new and, in addition to the Waregold and Wareplatinum papers, will also appeal to those printers who use papers of the higher qualities.

GOVERNMENT PAPER AWARDS

(Continued from page 18)

No. 404—40,000 pounds strawboard. Flat, 26x38 inches. No. 50. All bids rejected.

No. 405—10,000 pounds Lined Strawboard. Flat, 26x38 inches. No. 50. No bidders.

No. 406—72,000 pounds Lined Boxboard, lined one side; basis, 26x38 inches, No. 40. Flat, cut 24½x34 inches. The Whitaker Paper Co., 1.64 cents per lb. 1 year.

No. 407—700,000 pounds Solid Binders Board, hard rolled, No. 2 quality. Flat, to trim 25x30 inches, Nos. 16, 18, 20, 25, 30 and 40. R. P. Andrews Paper Co., 2.788 cents per lb. 1 year.

No. 408—100,000 pounds Solid Binders Board, hard rolled, No. 1 quality, Flat. The Barton, Duer & Koch Paper Co., 4.10 cents per lb. 1 year.

R. B. Livermore Joins Tarentum

Tarentum Paper Mills, manufacturers of rope, jute, kraft and colored specialties, with general office and mills at Tarentum, Pa., announces that R. B. Livermore, who for a number of years was connected with Hollingsworth & Vose, and later with the International Paper Company, has become associated with its mill at Tarentum.

LAND O'LAKES CASEIN

LANDOLAKES

High quality Casein made under strict laboratory control. Excellent solubility. Satisfactory viscosity. Write for sample and quotations.

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DISPENSING CABINETS
AND
FIXTURES
THE STANDARD OF THE PAPER TRADE
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SODA ASH
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Contract or Spot Delivery
In tank cars and multiple unit cars.
Write for Prices

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100 Tons Kraft Per Day — 58% A. D.
With the Famous Kamyr Wet Machine

Production . . . .

Kraft	up to	100	Tons
Sulphite	up to	80	Tons
Soda	up to	60	Tons
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Results . . . . . .

With 1 Press . . . . . 42% A.D.
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PAPER MACHINERY Ltd.
MONTREAL

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, February 3, 1932.

BLANC FIXE.—Conditions in the blanc fixe market are fairly satisfactory. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45 per ton; while the powder is selling at from 3¼ cents to 3⅜ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Contract shipments are going forward at a normal pace. Prices are steady. Bleaching powder is quoted at from $1.75 to $2 per 100 pounds, in drums, at works.

CASEIN.—The casein market continues quiet. Domestic standard ground is quoted at 7½ cents and finely ground at 8 cents per pound. Argentine standard ground is selling at 8½ cents and finely ground at 9½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Most of the business transacted in the caustic soda market was routine. Solid caustic soda is quoted at from $2.50 to $2.55; while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—Trading in the china clay market is moderately active. The contract movement is fairly satisfactory. Imported china clay is quoted at from $11 to $13 per ton; while domestic paper making clay is selling at from $7 to $11 per ton, at mine.

CHLORINE.—Steadiness prevails in the chlorine market. Shipments against contract are moving in fairly heavy volume. Prices are holding to schedule. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market continues dull and prices declined slightly. The grades of gum rosin used in the paper mills are quoted at from $3.50 to $3.95 per 280 pounds, in barrels, at works. Wood rosin is selling at $3.75 per 280 pounds, in barrels, on dock.

SALT CAKE.—Demand for salt cake is only moderately active. Prices are unchanged. Salt cake is quoted at from $15 to $16; chrome salt cake at from $12 to $13 per ton, in bulk, at works. Imported salt cake is selling at from $14.50 to $15 per ton, ship side.

SODA ASH.—The soda ash market is exhibiting a strong undertone. Contract shipments are going forward at a steady pace. Prices are firm. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1; in bags, $1.25; and in barrels, $1.38.

STARCH.—There were no radical changes in the starch market during the past week. Supplies are moving into consumption with regularity. Special paper making starch is still quoted at $2.54, in bags; and at $2.81, in barrels, per 100 pounds, at works.

SULPHATE OF ALUMINA.—Paper mill demand for sulphate of alumina is fairly persistent. Prices are holding to schedule. Commercial grades are quoted at from $1.25 to $1.40; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is more buoyant. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton for any smaller quantity over that period. On spot and nearby car loads, the quotation is $21 per ton.

TALC.—The talc market is listless at present. Contract shipments are going forward in fair volume for the season. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at mine; while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@38.00
Bonds	5.00	@53.25
Index	6.00	@12.00
Writings—		
Extra Superfine	6.50	@15.00
Superfine	6.25	@14.75
Tub sized	4.50	@ 7.00
Engine sized	3.00	@ 5.00
Book, Cased—		
S. & S. C.	5.25	@ —
M. F.	3.75	@ 5.00
Coated and Enamel	6.25	@ 9.75
Lithograph	6.75	@11.25
Tissues—Per Ream—		
White No. 1	.65	@ .70
Anti-Tarnish M. G. only	.65	@ .70
Colored	.70	@ .90
White No. 2	.50	@ .60
Kraft	.65	@ .70
Manila	.55	@ .60
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.00	@ 5.25
No. 2 Wood	3.50	@ 4.00
Butchers	3.37½	@ —
Fibre Papers—		
No. 1 Fibre	4.25	@ 5.50
No. 2 Fibre	4.00	@ 4.75
Common Bogus	1.50	@ 3.00
Screenings	2.00	@ 3.00
Card Middies	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs., No. 1	.09¼	@ —
No. 2	.11¼	@ —
Bleached, basis 20 lbs.	.11¼	@ —

(Delivered New York)

News, per ton—		
Roll, contract	53.00	@ —
Rolls, spot	53.00	@ —
Sheets	58.00	@ —
Side Runs	38.00	@42.00
Kraft—		
No. 1 Domestic	4.75	@ 6.00
No. 2 Domestic	3.25	@ 4.00
Southern	3.25	@ 4.00
Imported	3.50	@ 4.30
Boards—per ton—		
News	24.00	@27.50
Straw	34.50	@45.00
Chip	24.00	@27.50
Binders' Boards	67.00	@70.00
Standard 85 Test Liner	32.50	@37.50
Sgl. Mla. Ll. Chip	32.50	@37.50

(F. o. b. Mill)

Wood Pulp Boards	70.00	@80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—		
Moist	22.00	@24.00
Dry	22.00	@24.00

(F. o. b. Mill)

No. 1 Domestic	20.00	@28.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	2.00	@ 3.00
Easy Bleaching	1.60	@ 1.75
No. 1 strong unbleached	1.50	@ 1.75
Mitscherlich unbleached	1.55	@ 1.75
No. 2 strong unbleached	1.40	@ 1.50
No. 1 Kraft	1.50	@ 1.75
No. 2 Kraft	1.40	@ 1.50
Sulphate—		
Bleached	2.35	@ 2.50

(F. o. b. Pulp Mill)

Sulphite (Domestic)—		
Bleached	2.00	@ 4.00
Easy Bleaching	1.75	@ 1.90
News	1.50	@ 1.65
Mitscherlich	2.40	@ 2.55
Kraft (Domestic)	1.60	@ 2.75

(Delivered Paper Mills)

Soda Bleached	2.50	@ —

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	6.50	@ 7.00
New White, No. 2	5.50	@ 6.00
Silesias No. 1	5.25	@ 5.50
New Unbleached	7.00	@ 7.50
New Blue Prints	4.00	@ 4.50
New Soft Blacks	3.50	@ 4.00
Blue Overall	5.00	@ 5.25
Fancy	3.00	@ 3.50
Washables	2.75	@ 3.00
Mixed Khaki Cuttings	3.50	@ 4.00
Pink Corset Cuttings	5.00	@ 5.50
O. D. Khaki Cuttings	4.50	@ 4.75
Men's Corduroy	3.00	@ 3.50
New Mixed Blacks	3.00	@ 3.25

Old Rags

White, No. 1—		
Repacked	5.25	@ 5.75
Miscellaneous	4.25	@ 4.75
White, No. 2—		
Repacked	3.00	@ 3.50
Miscellaneous	2.30	@ 2.50
St. Soiled, White	1.50	@ 1.75
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.65	@ 1.85
Black Stockings	3.25	@ 3.75
Roofing Rags—		
Cloth Strippings	1.25	@ 1.30
No. 1	1.25	@ 1.30
No. 2	.90	@ 1.00
No. 3	.70	@ .80
No. 4	.65	@ .70
No. 5A	.50	@ .60

Foreign Rags

New Rags

New Dark Cuttings	1.40	@ 1.50
New Mixed Cuttings	1.60	@ 1.75
New Light Silesias	3.40	@ 3.50
Light Flannelettes	3.75	@ 4.00
Unbleached Cuttings	5.50	@ 6.00
New White Cuttings	4.75	@ 5.00
New Light Oxfords	4.00	@ 4.25
New Light Prints	2.00	@ 2.25

Old Rags

No. 1 White Linens	5.25	@ 5.50
No. 2 White Linens	4.50	@ 4.75
No. 3 White Linens	3.25	@ 3.75
No. 4 White Linens	1.75	@ 2.25
No. 1 White Cotton	4.00	@ 4.25
No. 2 White Cotton	3.00	@ 3.25
No. 3 White Cotton	2.25	@ 2.50
No. 4 White Cotton	1.40	@ 1.50
Extra Light Prints	1.90	@ 2.10
Ord. Light Prints	1.60	@ 1.75
Med. Light Prints	1.40	@ 1.55
Dutch Blue Cottons	1.35	@ 1.40
French Blue Linens	2.00	@ 2.25
German Blue Linens	2.00	@ 2.10
German Blue Cottons	1.20	@ 1.25
Checks and Blues	1.25	@ 1.30
Lindsay Garments	.75	@ .80
Dark Cottons	.70	@ .75
Old Shopperies	.55	@ .60
New Shopperies	.60	@ .65
French Blues	1.25	@ 1.30

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.10	@ 1.20
Domestic	1.15	@ 1.25
Wool Tares, light	1.00	@ 1.05
Wool Tares, heavy	1.00	@ 1.10
Bright Bagging	1.00	@ 1.05
Small Mixed Rope	.90	@ 1.00
Manila Rope—		
Foreign	1.50	@ 1.60
Domestic	1.50	@ 1.75
New Burlap Cut	1.70	@ 1.80
Hessian Jute Threads—		
Foreign	2.60	@ 2.75
Domestic	2.80	@ 3.00

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, white, No. 1	2.55	@ 2.75
Hard, white, No. 2	1.90	@ 2.00
White envelope cuttings	2.05	@ 2.15
Soft, white, No. 1	1.70	@ 1.80
Flat Stock—		
Stitchless	.70	@ .80
Overissue Mag.	.70	@ .80
Solid Flat Book	.60	@ .70
Crumped No. 1	.45	@ .50
Solid Book Ledger	1.75	@ 1.85
Ledger Stock	.60	@ .70
New B. B. Chips	.20	@ .30
Manilas—		
New Env. Cut	1.75	@ 1.85
New Cuttings	1.40	@ 1.50
Extra No. 1 old	1.05	@ 1.15
Print	.45	@ .50
Bogus Wrapper	.45	@ .50
Container	.25	@ .30
Old Kraft Machine—		
Compressed bales	1.00	@ 1.10
News—		
No. 1 White News	1.60	@ 1.65
Strictly Overissue	.35	@ .45
Strictly Folded	.25	@ .30
No. 1 Mixed Paper	.15	@ .20
Common Paper		Nominal

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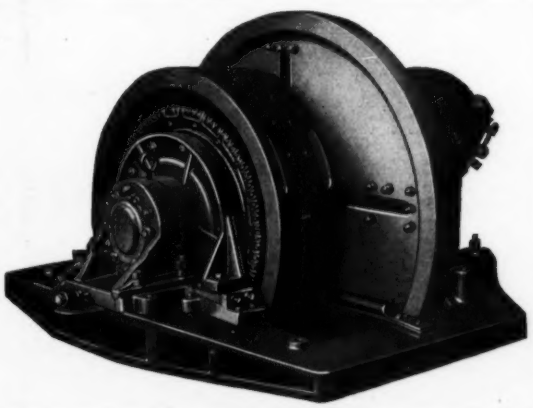

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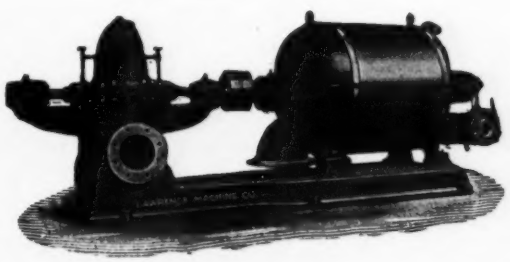

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Twines
(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.11¾	@	.12¾
Tube Rope—			
4-ply and larger	.09¾	@	.11¾
Fine Tube Rope—			
4-ply	.11	@	—
3-ply	.12	@	—
2-ply	.13	@	—
Paper Makers Twine			
Balls	.08¾	@	.10¼
Box Twine, 2-3 ply	.07	@	.08
Jute Rope	.09	@	.10
Amer. Hemp, 6	.27	@	.29
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.23	@	.28

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	05	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.50	@	5.00
Southern Kraft	3.25	@	—
No. 2 Kraft	3.25	@	—
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07¼
White Tissue	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	53.00	@	—
Sheets	58.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	1.75	@	1.85
No. 1 Soft White	1.60	@	1.65
Ledger & Writings	.70	@	.75
Solid Books	.70	@	.75
Blanks	1.30	@	1.35
Krafts	1.15	@	1.25
New Kraft Cuts	1.30	@	1.45
Manila Env. Cuts	1.60	@	1.75
Ex. No. 1 Manila	1.25	@	1.30
Print Manila	.40	@	.45
Overissue News	.40	@	.50
Old Newspapers—			
No. 1	.35	@	.45
No. 2	.30	@	.40
Mixed Papers—			
No. 1	.25	@	.30
No. 2	.25	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.09
Manila Sul., No. 1	.03	@	.05
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¾
Southern Kraft No. 1	—	@	.04
Southern Kraft No. 2	—	@	.03¾
Common Bogus	.03	@	.04
(Delivered Philadelphia)			
News Print Rolls	58.00	@	62.00
Straw Board	50.00	@	—
News Board	30.00	@	32.00
Chip Board	25.00	@	27.50
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	63.00	@	65.00
Carload lots	62.00	@	67.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.06	@	.06½
New White, No. 2	.05	@	.05½
Light Silesias	.05	@	.05½
Silesias, No. 1	.06	@	.08
Black Silesias, soft	.05	@	—
New Unbleached	.06	@	.06½
Washable, No. 1	.02½	@	.03
Blue Overall	.05	@	.05½
Cottons—According to grades—			
Washable, No. 2	.02	@	.02½
New Blue	.02	@	.02½
Fancy	.03	@	.03¼
New Black Soft	.03	@	.03½
New Light Seconds	.01¾	@	.02
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O.D.	.04½	@	.05
No. 2 Mixed	.03½	@	.04
Corduroy	.02½	@	.03
New Canvas	.06½	@	.07
New Black Mixed	.03	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	2.25	@	2.75
M. G.	4.50	@	—
Thirds and Blues—			
Miscellaneous	1.25	@	1.50
Repacked	1.75	@	2.00
Black Stockings (Export)	3.80	@	4.00
Roofing Stock—			
Foreign No. 1	1.15	@	1.25
Repacked	.80	@	.90

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	2.25	@	2.50
Sisal Rope	1.25	@	1.50
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.10	@	2.20
No. 2 Hard White	1.75	@	2.10
No. 1 Soft White	1.50	@	1.70
No. 2 Soft White	1.40	@	1.50
No. 1 Mixed	.45	@	.55
No. 2 Mixed	.40	@	.50
Solid Ledger Stock	1.20	@	1.30
Writing Paper	.60	@	.75
No. 1 Books, heavy	.60	@	—
No. 2 Books, light	Nominal		
No. 1 New Manila	1.25	@	1.50
No. 1 Old Manila	1.00	@	1.25
Print Manila	.45	@	—
Container Manila	.35	@	.40
Old Kraft	.90	@	1.00
Common Paper	.20	@	—
No. 1 Mixed Paper	.15	@	.25
Straw Board, Chip	.25	@	.35
Binders Board, Chip	.25	@	.35
Corrugated Board	.25	@	.35
Overissue News	.40	@	.50
Old Newspaper	.30	@	.35

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11½
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¾
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	.03¼	@	.03½
(F. o. b. Boston)			
Southern Kraft	.03¼	@	.03½
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
(Delivered New England points)			
News Print, rolls	—	@	56.50
Straw Board, rolls	.009	@	52.50
Straw Board in Sheets, basis 35s to 70s	—	@	50.00
Filled News Board	27.50	@	30.00
Chip Board	—	@	25.00
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	—	@	35.00
Single White, Patent Coated News Board—			
Binder	52.50	@	60.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	67.50	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.50
No. 2 Hard White	2.25	@	2.50
No. 1 Soft White	1.50	@	1.75
No. 2 Mixed	.50	@	.55
No. 1 Mixed	.75	@	.85
Solid Ledger Books	1.50	@	1.75
Overissue Ledger Stock	1.35	@	1.60
Mixed Ledgers	1.15	@	1.30
No. 1 Books, heavy	.65	@	.75
No. 1 Books, light	—	@	.45
Crumpled Stitchless Book Stock	1.00	@	1.25
Manila Env. Cuttings	1.85	@	2.00
No. 1 Old Manila	.80	@	.90
White Blank News	1 35	@	1.45
Kraft No. 1	—	@	.85
Manila	.90	@	1.00
No. 1 Mixed Paper	.15	@	.17½
Print Manila	.35	@	.40
Overissue News	.35	@	.40
Old Newspapers	.22½	@	.27½
Box Board, Chip	.17½	@	.20
Corrugated Boxes	.30	@	.32½

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.00
Domestic	—	@	1.10
Manila Rope—			
Foreign	1.25	@	1.50
Domestic	—	@	1.50
Transmission Rope	—	@	1.25
Mixed String	.25	@	.35
Jute Rope	—	@	1.00
Jute Carpet Threads	.75	@	.90
Bleachery Burlap	—	@	2.25
Scrap Burlap	—	@	.85
No. 1 Scrap Burlap	—	@	.90
Scrap Sisal	1.15	@	1.25
Scrap Sisal for shredding	—	@	1.25
Wool Tares, heavy	1.00	@	—
New Burlap Cutting	1.50	@	1.75
Australian Pouches	—	@	1.50
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	.75	@	.85
Bagging No. 2	—	@	.40
No. 1 Burlap	—	@	3.50

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	—	@	.05¼
New White No. 2	—	@	.04
Silesias No. 1	.04½	@	.05
New Black Silesias	.02½	@	.02¾
New Unbleached	.05½	@	—
Fancy	—	@	.03¾
Washable	—	@	.03½
Cottons—According to grades—			
Blue Overalls	—	@	.05
New Black, soft	.04	@	.04¼
Khaki Cuttings	.03	@	.03½
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03¼
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	—	@	4.00
White No. 2—			
Repacked	.04½	@	.03
Miscellaneous	.03½	@	.04
Twos and Blues	—	@	1.50
Thirds and Blues—			
Repacked	—	@	.85
Miscellaneous	1.00	@	1.20
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	.48	@	.53
No. 2	.43	@	.48
No. 3	.38	@	.43

Foreign Rags
(F. o. b. Boston)

Dark Cottons	—	@	.55
New No. 1 White Shirt Cuttings	5.00	@	5.50
Dutch Blues	—	@	1.80
New Checks & Blues	4.00	@	4.50
Old Fustians	1.55	@	1.65
Old Linsey Garments	.65	@	.70

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¾	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.11¾	@	—
No. 2 Colored	.09	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (Carloads)	6.65	@	—
No. 3 M. F. (Carloads)	6.20	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.65	@	—
No. 4 S. C. (carloads)	5.70	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.50	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.60	@	—
White Wrap	5.10	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.60	@	—
Fiber	5.60	@	—
Kraft, M. F.	5.98	@	—
Kraft No. 2	5.60	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	56.50	@	57.00
Sheets	61.50	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	50.00	@	—
Sulphite, news grade	44.00	@	—
Sulphite, bleached	62.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.85	@	—
Soft White	2.40	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	—
Light and Crumpled Book Stock	.80	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut	1.70	@	—
Printed Manilas	.65	@	—
Kraft	1.75	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¼

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PAPER TRADE JOURNAL

ESTABLISHED 1872

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SIXTIETH YEAR

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